It takes a triad of components to produce eye-catching and aesthetically sound images using digital cameras and software: *creativity, camera competence, and software savvy*. Having addressed the first two elements of this trio already, this chapter sets out to exhibit a core set of software techniques that can be applied to improve the appearance and thematic impact of just about any picture you take. Photoshop is used to demonstrate the topics in this chapter since it is perhaps the most widely used and versatile program in use today. If you already know how to use Photoshop, then you should be able to easily follow the demonstrations. If you do not know how to use image-oriented software (Photoshop or a similar program), it's time to think about learning. Why? *Because software is to digital images as the darkroom is to film: Nearly all images depend on competent post-shooting handling to achieve their full potential.*

3 section: Digital Effects

Shooting conditions, camera settings and a camera's capabilities do not always come together in a way that produces images with a pleasing degree of contrast and visual "snap." Fortunately, dull images can often be rescued by using Photoshop's LEVELS controls. *In fact, just about any photo can benefit from some degree of* LEVELS *adjustment.*

LEVELS adjustments can also be used to create intriguing visual effects.

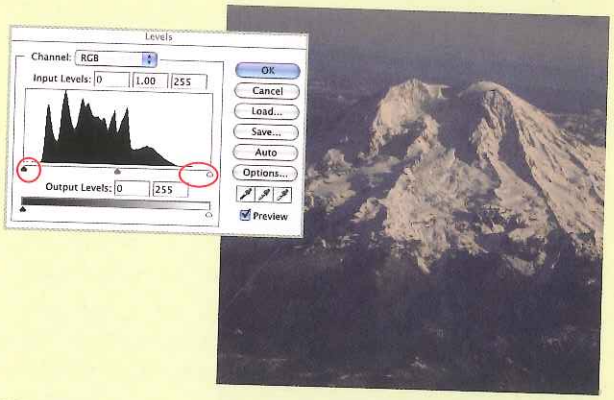
If you are an adept Photoshop user, these operations will probably be familiar to you. If not, they are easy to learn. If you need help, consult an experienced Photoshop user, the manual, or any of the numerous books or online sources that show how to use the functions of this remarkable image-enhancement program.

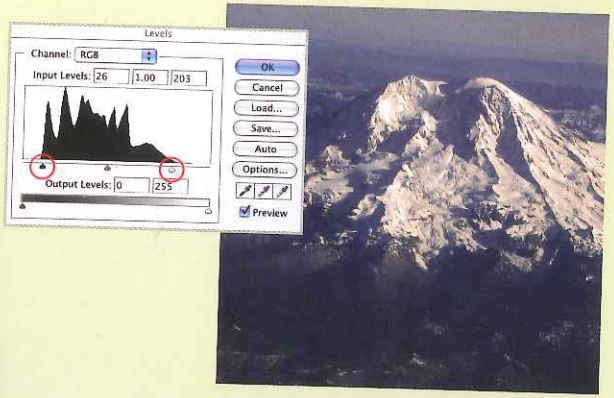
In its original form, this photo appears dingy and its colors seem muted. When the LEVELS panel is opened, gaps are evident at both ends of its histogram (circled). This means that the image does not contain areas that are either white or black. In most cases, it is desirable to see the histogram tapering out as it reaches each extreme (indicating that the values* in the image span the entire range of light to dark).

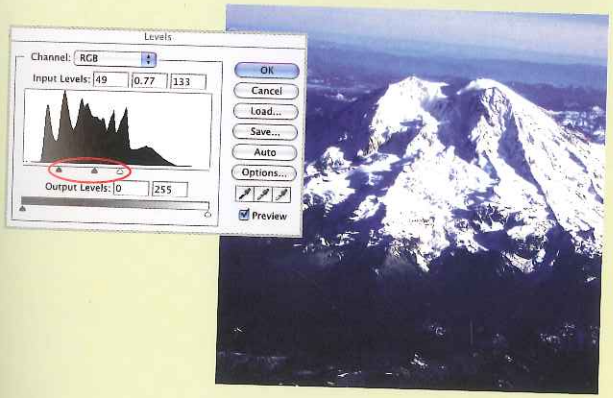
To expand the image's range of values to its fullest potential, the sliders at either end of the dark/light spectrum are moved to the point where the graph shows activity. This causes the computer to redistribute the image's values from pure black to true white. The middle slider, though not used in this example, can be used to weigh the overall appearance of the image toward a lighter or darker presentation.

More drastic slider movements can be used to create more artful, less realistic results. Also experiment with the channel menu at the top of this panel—this pull-down menu allows the levels of individual colors to be independently adjusted.

**Value = the relative lightness or darkness of a color or shade compared to a scale of white to black.*







The appearance of this photo (first featured on page 141) is quite true to the actual conditions under which it was shot. The image displays a pleasing degree of value contrast throughout.

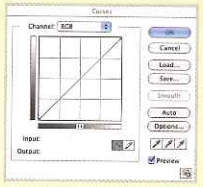
CURVES controls can be used to transition the emphasis of an image's values toward lighter or darker hues. Used more radically, these same controls can be applied to attain all kinds of far-flung visual effects.

CURVES and LEVELS controls are largely interchangeable. Many Photoshop users find that it is most efficient to first maximize an image's contrast using LEVELS controls (as demonstrated on the previous spread), and then applying CURVES controls to fine-tune the image's dark vs. light qualities.

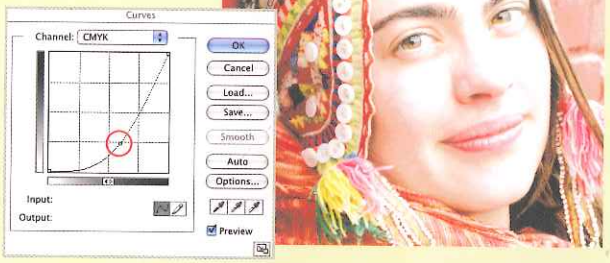
To achieve a brighter presentation, a point has been added to the image's CURVES line. The point was then moved to create a new curve that results in a brighter presentation of the image. *It's easy to become acquainted with the workings of the* CURVES *control. Just click on the default line (top panel, opposite) to establish a new point and then move the cursor around until you see a result that you like.*

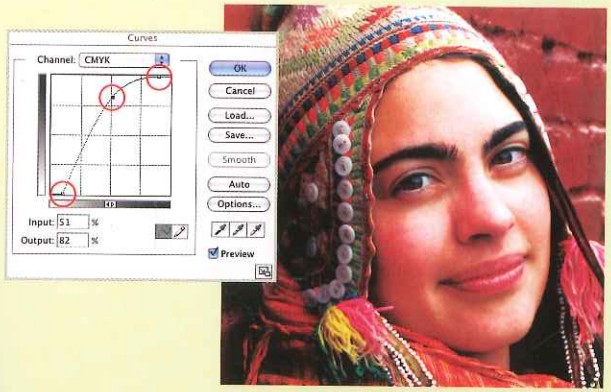
Here, both the top point (representing the image's highlights) and the bottom point (dark areas) have been moved inward to restrict the range of values in the image. The curve has also been reconfigured to intentionally "overexpose" lighter areas of the image while deeply saturating darker areas. The result, though not as true-to-life as the original, is striking and colorful.

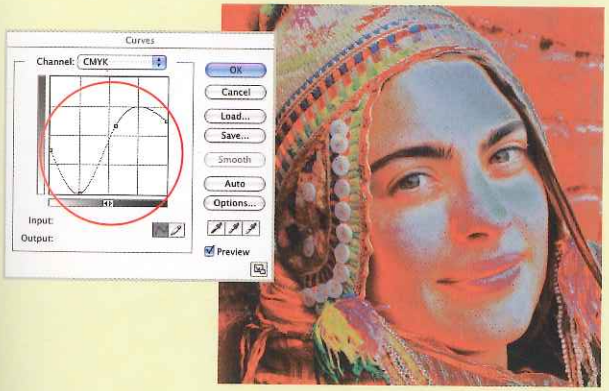
Explore the effects of crazy modifications within the CURVES panel. *Each of these examples demonstrates changes to the "master" channel within the* CURVES *panel. This channel affects overall relationships between the colors and values within an image. Adjustments to individual colors can be made by pulling down the "channels" menu at the top of the* CURVES *window.*



BEFORE AFTER

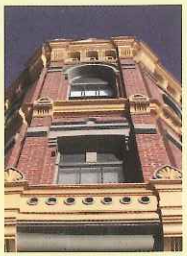






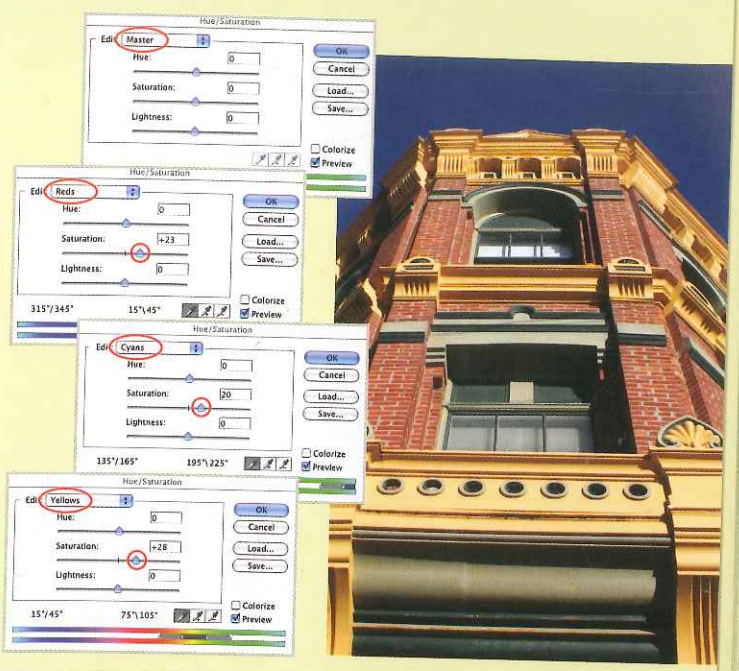
The photo used at the beginning of the color chapter was fairly vibrant when it was originally shot. However, since it was to be the flagship image for a chapter on color, its hues needed to be enhanced to their fullest (natural-looking) potential. HUE AND SATURATION controls are ideal for this kind of of color makeover.

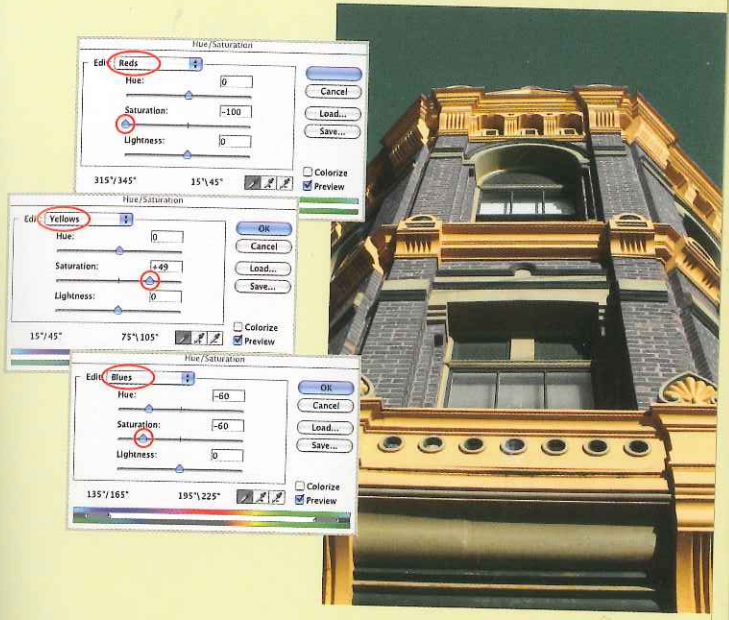
Be sure to take advantage of your computer's UNDO *and* SAVE *commands as you fearlessly explore all kinds of interesting color effects. Take chances; note your successes as well as your "failures"—something that does not work well for one image might result in an eye-catching transformation when applied to another.*



The sliders within the master editing channel of the HUE AND SATURATION (H&S) panel can be used to apply global changes to an image. In this case, however, the master control has been left alone. Instead, the panel's pull-down menu has been used to select specific hues so that the saturation of each could be adjusted independently. *Notice the subtle but significant difference in the visual "pop" of the adjusted image (right) and the original (above).*

H&S controls can also be used to create unusual color effects. Here, the saturation of the red channel has been reduced to zero—this converts all red hues to grays. At the same time, the saturation of yellow hues have been amped to bring out colors in this range. The blue channel has been completely altered: Its color has been shifted to a green tone using the HUE control and the intensity of the resulting color was then muted by lowering its SATURATION value. Modifications such as these can quickly change a true-to-life image to something out of the ordinary.

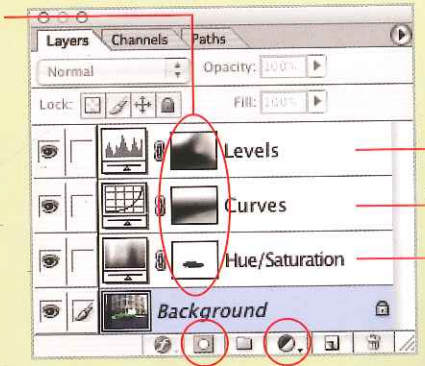




Adjustments within Photoshop can be made to blur the line between photo and illustration—to create images that are more artistic than realistic. SEE DIGITAL EXPLORATION..., PAGE 350, FOR A WIDE RANGE OF SAMPLES.

To create the image featured on page 110, the three controls featured on the previous pages were used: LEVELS, CURVES and HUE AND SATURATION (H&S). *Adjustment layers* were used to apply these effects (note the LAYERS palette below). Using adjustment layers—versus applying adjustments directly to an image via a pull-down menu—gives you the opportunity to revisit each adjustment since the controls in each layer can be reopened and readjusted.

Use *masks* to control the strength of an adjustment layer. Note how each of these masks (circled) have been painted with varying degrees of darkness to control the strength and distribution of their effects.* A clipping path was used to define the shape of the car in the H&S layer so that its color-cancelling effects would affect everything *except* the car.



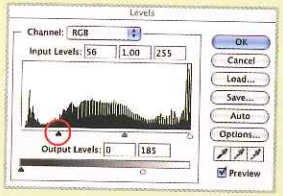
Pull down this menu to select and create an adjustment layer.

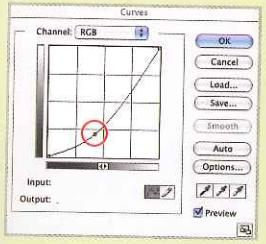
Then, click here to create a mask for the adjustment layer. This mask can be painted in tones ranging from black to white to control its effects.

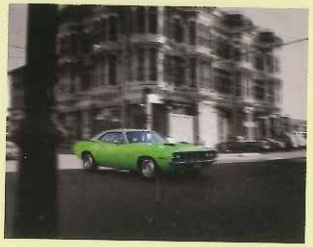
*White areas of a mask allow the layer to function at full strength. Darker shades limit the mask's effects.

Right: The original image.

Below: Contrast is strengthened using LEVELS; the tone of the image is deepened using CURVES; and the colors in everything but the car are converted to grays using HUE AND SATURATION controls.



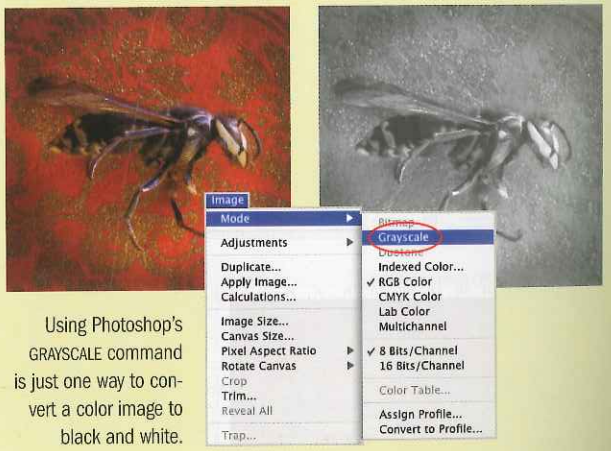




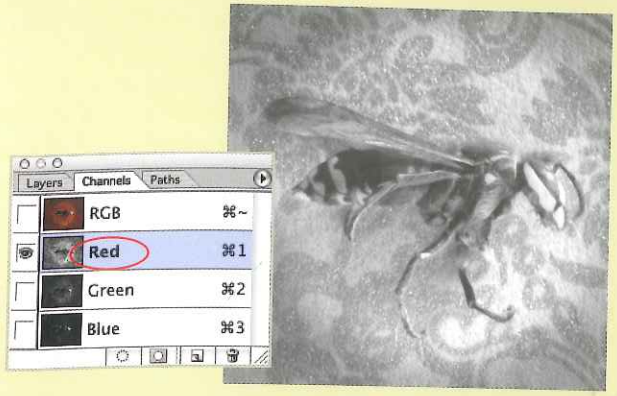
At the bottom of this page, the colorful image of the wasp featured on pages 28-29 has been converted to black and white using Photoshop's GRAYSCALE command. This method of converting a color image to black and white often works just fine, but before you settle on this technique, be sure to see if the image's grayscale potential could be better achieved by individually selecting one of its RGB components (as demonstrated on the facing page).

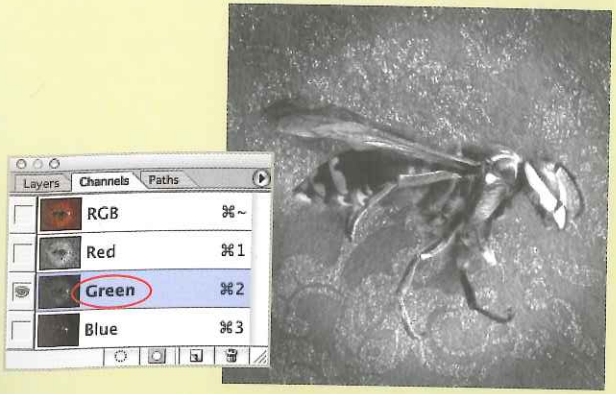
When an image comes from your digital camera, its color data is distributed in three channels: Red, Green, and Blue. Each of these channels can be viewed alone as a black-and-white image by selecting it in Photoshop's CHANNELS palette. Oftentimes, one of these channels will offer a black and white version of the image that is superior to the computer's default grayscale interpretation.

Notice the dramatic differences between each channel's presentation of a grayscale version of this image (right). If you want to use one of these RGB channels as the basis of a grayscale conversion, select the channel and *then* use the GRAYSCALE command. This will cause the computer to use only the selected channel's content to create a black-and-white rendering of the image.



Using Photoshop's GRAYSCALE command is just one way to convert a color image to black and white.





In addition to considering a black-and-white presentation for an image, you may want to think about tinting the image to give it a warm tone, a cool cast, or to transform it into an image made up of monochromatic hues.

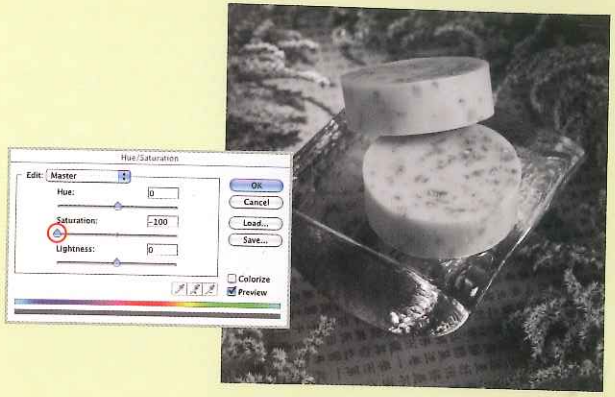
In this set of examples, the colorful image from page 53 has been treated using the HUE AND SATURATION controls to limit its palette.

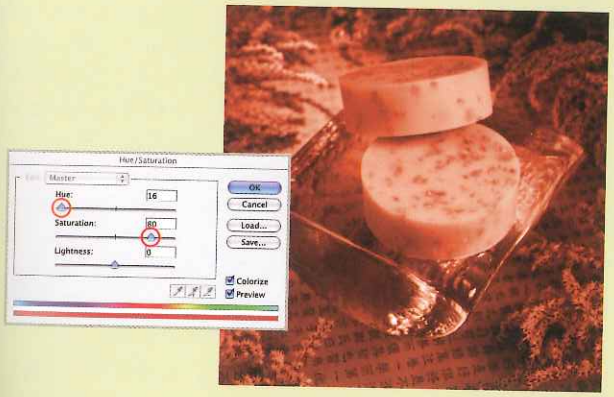
This technique can be particularly useful to commercial artists and designers who wish to use non-color images for stylistic or budgetary reasons.

In this example, the photo has been converted to an untinted black-and-white image using the HUE AND SATURATION control—a conversion technique that is worth considering in addition to those demonstrated on the previous spread.

Here, the image has been given a warm cast by activating the "colorize" button in the H&S panel and selecting this set of HUE AND SATURATION values (this particular formula was used to tint most of the monochromatic images in this book). Varying these sliders will result in different hues and strengths of the tints being applied. Experiment until you find a look that fits the presentation you are after.

To create this monochromatic version, the HUE has been shifted to an orange tone and the SATURATION has been increased. When applying this kind of effect, seek colors that complement and amplify the thematic look and feel of the image.





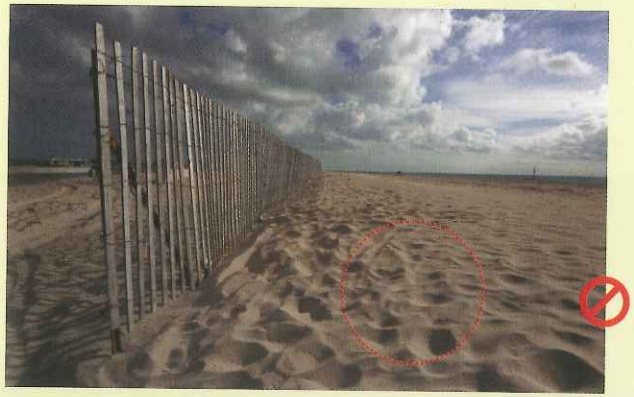
Even the BRACKETING feature of an advanced camera cannot overcome certain lighting challenges. In these cases, Photoshop's layer and masking capabilities can be used to replace poorly exposed areas of one photo with properly exposed areas of another. SEE **BRACKETING,** PAGE 310.

Hint: Since this technique requires stacking two or more images in Photoshop, use a tripod when you are shooting a scene that you think might cause this kind of exposure difficulties. That way, your images will line up exactly when you layer them in Photoshop.

The top two images, opposite, were taken using a digital SLR's BRACKETING feature. The foreground in the upper image looks good but the sky contains burned-out areas of overexposure.

The sky in this exposure looks fine, though now the foreground appears dull. Neither image is perfect as is, so Photoshop has been used to combine the better parts of each to create an attractive composite (below, opposite).

The repair process is initiated by placing the darker image in a layer above the lighter version. A mask was then applied to the top layer. This mask was filled with a gradation that created a seamless transition between the sky of the darker exposure and the foreground of the lighter exposure. The result: a well-balanced image throughout. When using this method, you may need to use selection and painting tools to create more complex masking layers (AS SEEN IN THE DEMONSTRATION ON PAGE 338).



Clipping paths can be used to define regions of a photo where adjustments need to be made or to remove elements from a photo entirely.

The POLYGON LASSO TOOL (demonstrated here) is often the best bet when it comes to manually creating a clipping path around a complex form within an image.

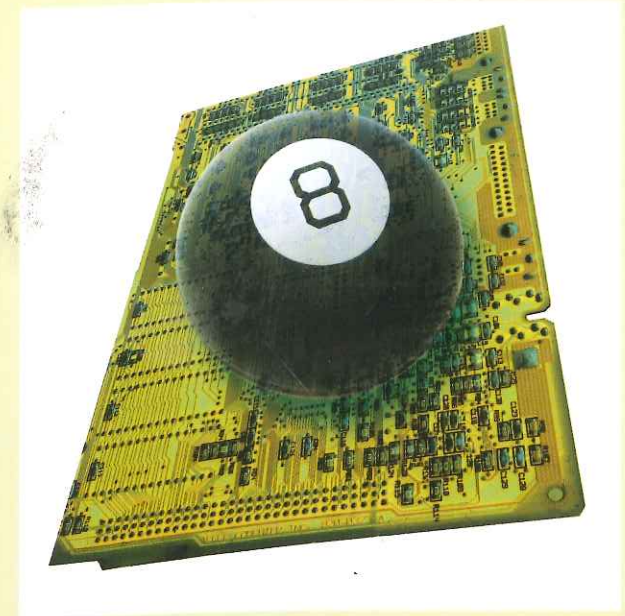
In this demonstration, a clipping path has been drawn around the motorcycle and its rider from page 319. Once selected, the knock-out image has been set against the page *sans backdrop.*

It can be tricky getting the mouse to follow the outline of a free-form shape using the regular LASSO TOOL. Instead, try zooming in and using the POLYGON LASSO TOOL—this allows you to follow complex shapes using a series of straight and easily controlled lines. Try to aim the tool just inside the edges of the object you are selecting so that you will be able to soften the outline later on by feathering it.

Once a subject has been completely outlined using the POLYGON LASSO TOOL, adjustments and masks can be applied to the selected area. Here, a layer mask has been applied in preparation for removing the subject from its original backdrop.

Hint: Lasso small areas at a time and combine them by holding down the shift key each time you start a new selection. This keeps you from having to redo the entire selection if you make a mistake.

Before copying the extracted image and pasting it onto this colored background, the edges of the mask were feathered 2 pixels. Such feathering subtly softens the transition between a pasted image and its backdrop (without it, there would be a harsh, bitmapped line between the overlaying image and its backdrop). The airbrush tool was used to add hints of a faux shadow beneath the motorcycle.



Mastery of Photoshop's advanced controls is not necessary for the creation of intriguing and artful images. The combination of an 8-ball and a colorful circuit board featured on page 57 was created using just five basic Photoshop controls: DISTORT, INVERT, HUE AND SATURATION, and LEVELS.

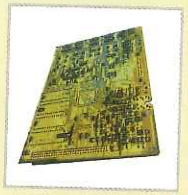
If you are familiar with these controls, you will be able to easily follow this demonstration and apply its ideas to images of your own. If you are new to Photoshop, or have not yet learned how to take advantage of features such as these, consider taking the time to learn how to use them. If you are a hands-on learner (as many designers and artists are), import photos of your own into Photoshop and experiment by applying controls such as these—as well as any others that interest you—to your image.

1. The original photo of a circuit board is opened in Photoshop.

2. The entire image is selected and put into faux perspective using the DISTORT controls.

3. The image is INVERTED to create a negative version of the circuit board. A clipping path has also been drawn around the circuit board and a mask has been applied to remove the small amount of background that showed at the bottom of the board.

4. HUE AND SATURATION controls are used to alter the photograph's hues. Take advantage of your computer's capabilities: experiment and play around with controls such as these until you see a result that you like.



5. LEVELS controls are used to strengthen the contrast among the colors and values in the image for greater visual impact.

6 and 7. An 8-Ball—removed from a photo via POLYGON LASSO TOOL—is placed over the circuit board and a blue DROP SHADOW is applied beneath the ball. A layer-mask with a semi-opaque area at the top was applied to the ball to create the translucent effect between parts of the ball and the circuit board (as seen on the opposite page).

POSTERIZE an image to simplify its colors and give it a more graphic presentation.

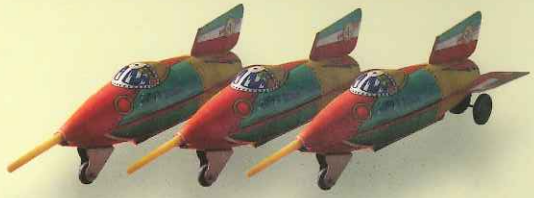
INVERT! Images of people, places and things take on a whole new look when seen in negative form.

Explore all kinds of alternate visual universes using Photoshop's filters and effects.

Here, a sampling of effects has been applied to the rocket ship first featured on page 61.

Transform images into pseudo-paintings with artistic filters such as Photoshop's FRESCO.

The TWIRL filter can be used to turn just about any image into an interesting abstraction.



Create a clipping path to separate your subject from its backdrop and then clone away...

This pop art effect was achieved by applying the COLOR HALFTONE filter and placing the resulting image in a layer above an untreated original (using the SOFT LIGHT command between layers).

The NEON filter was used to create this flattened sci-fi effect. A DROP SHADOW was applied to add a sense of dimension between the image and the page below.

Photoshop's powerful LIQUEFY controls can be used to do all kinds of crazy things to an image. Try them out on a picture of a toy, person or pet.

Glossary and Index

Ambient light. The naturally occurring illumination existing within a scene.

Aperture. The adjustable iris-like opening inside a lens that controls how much light reaches the image sensor. Some cameras allow for manual control of the aperture opening—others handle its functions automatically. Aperture affects both exposure and depth of field.

Auto focus. A feature that allows the camera to automatically focus on a subject. Most digital cameras use either infrared light or ultrasound to measure the distance to the subject and adjust the lens's focus accordingly.

Backlighting. A lighting arrangement where the subject is between the camera and the light source.

Bracketing. A technique of taking a set of photos—each shot at a slightly different exposure—to help ensure that at least one is properly exposed. Full-featured digital cameras usually offer an AUTOMATIC BRACKETING feature.

Channel. One segment of the three spectral components in which digital cameras record their images. The three channels of a digitally recorded image are red, green and blue.

Clipping path. A Photoshop term for the selection line drawn around a specific portion of an image.

CMYK. Abbreviation for Cyan, Magenta, Yellow and Black. For most printing purposes, images need to be converted from their native RGB mode to CMYK via software.

Continuous shooting mode. A feature of many digital cameras that allows them to take a steady stream of shots while the shutter button is held down.

Crop. To select only a desired portion of an image for display.

Curves. A highly adjustable Photoshop control that allows the user to control the distribution of values and hues within an image.

Depth of field. The zone in which the camera sees things as being in focus. Objects outside this zone (both nearer to and farther from the camera) appear out of focus. Depth of field is the product of several factors: the focal length of the lens being used; the distance to the object being focused on; and the aperture opening (a narrower opening means a deeper depth of field; a wider opening means a shallower depth of field).

Desaturate. The removal of all color hues from an image. Desaturation results in a black-and-white image.

Diffusion panel. A translucent sheet of fabric or paper that is placed between a light source and the subject to soften the light's effect.

Exposure. The amount of light that reaches the image-sensor to create an image.

Exposure compensation. A semi-automated feature of most digital cameras that allows the user to lighten or darken the images they are taking by selecting a value from

+2 (brighter) through -2 (darker).

Framing. A visual term used to describe when certain elements of a composition enclose others.

Grayscale image. Another term for a desaturated (black-and-white) image.

Histogram. A graphic read-out that displays the brightness and contrast levels within an image. Photoshop's LEVELS control features a histogram. Many cameras also offer a histogram view of their images through the LCD.

Hue. Another term for color.

Hue and saturation. A control within Photoshop that allows for adjustments to the color, intensity and brightness qualities of a specific hue—or all hues globally—within an image.

Keystoning. The effect that occurs when a lens causes lines within an image (lines that should be parallel) to converge.

Knock-out. An image whose subject matter's background has been removed (via a clipping path, in the case of digital images).

Lasso tools. A family of tools within Photoshop that are used to manually draw clipping paths.

LCD. Liquid Crystal Display. A panel on the back of most digital cameras that can be used as a viewfinder, to review images, and to control menu items.

Levels. A control within Photoshop that allows adjustments to be made to an image's range of values and color balance.

Light table. A rectangular box or tabletop enclosure equipped with lights that shine from beneath a frosted glass surface.

Macro lens. A lens specifically designed to take close-up photos. Most macro lenses have a magnification ratio of 1:1 or greater.

Megapixel. One million pixels. The size and quality of most digital camera's image-capture capabilities are measured in megapixels.

Monochromatic. An image or scene that is composed of values of one hue.

Monopod. A single leg (usually telescopic) with a camera-mount at the top. Used for steadying the camera.

On-camera flash. The on-board flash unit built into a camera.

Overexposure. The effect that occurs when cells of the image sensor receive so much light that the corresponding areas of the image are pure white.

Pixel. A single cell within the complex grid of individual hues that make up an image captured by a digital camera.

Reflector. Anything used to bounce light into shadow areas of a scene. Also the name of a photographic aid (usually a flexible disk of reflective fabric) used for these purposes.

Resolution. The level of detail recorded by a digital camera. Also the level of detail present in an on-screen or printed image.

RGB. Red, green and blue: The three colors with which digital cameras and computer monitors build their images. Images in RGB format can be converted to other color models (such as CMYK) using software.

Saturation. The intensity of a hue. Highly saturated colors are at their most intense. Colors with low levels of saturation appear muted.

Shutter speed. The duration of time during which the shutter is open (and thereby allowing light to reach the image-sensor) during a shot.

SLR. Single Lens Reflex. A camera whose viewfinder sees through the same lens that will be sending light to the image-sensor. The lenses on most SLRs are interchangeable.

Standard zoom lens. A versatile lens that has a field of view comparable to the human eye's central viewing area. This lens is also capable of moderate image magnification.

Tangent. The visual meeting point between two lines or surfaces.

Telephoto lens. A relatively compact lens capable of a wide range of telescopic magnifications.

Tint. A hue that has been applied to a grayscale image to give it a monochromatic color scheme.

Tripod. A three-legged camera steadying device. The legs of most tripods are telescopic and can be compacted for ease of transport.

Underexposure. The effect that occurs when cells of the image-sensor have not received enough light to fully portray the corresponding areas of an image.

Value. The relative lightness or darkness of a color or shade compared to a scale of white to black.

Viewfinder. The small optical window on many cameras that is used to compose shots.

Visual hierarchy. The varying degrees of importance and visual attraction among elements of a composition.

Visual texture. A dense repetition of elements that form anything from an organized pattern to a free-form, chaotic assemblage.

White balance. The way in which a camera measures and records prevailing light so that whites—as well as all other colors—appear normal to the eye of the viewer.

Wide angle lens. A lens with a broad field of view.