Advantages of Adobe Photoshop Elements 2.0* over the full version of Photoshop

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The high cost of Photoshop and its increasing complexity with each new version can leave the user longing for a version that is a fraction of the price, but still contains the basic features. That longing may be met with Adobe's Photoshop Elements.

Certainly its price is attractive at $99.00 on some websites and about $50.00 on others (including sites for those in Education). For the shopper who wishes to do a little extra research, a web search may reveal that Elements is included with a scanner or ink jet printer at well under $99.00, making the purchase a 2-for-1.

Elements is a pared down version of Photoshop, but it is still a viable solution for almost all image processing needs. Simply because it is pared down, it becomes very attractive for occasional users who do not desire to re-learn the full version of Photoshop, let alone another upgrade and yet more frustrating minutes to discover. Only those who need to preserve 16-bit images for subsequent intensity/density measurements, and those who need to create CMYK files for publication, will need the full version of Photoshop (though the site hiddenelements.com advertises the ability to use Elements for CMYK conversion).

Because Elements is pared down and relatively uncluttered isn't the only attraction: even though some features are missing, plug-ins and actions can be downloaded to add functionality, or to achieve the same end using only the tools that are available. These added features for functionality are advertised at hiddenelements.com, and a full set of actions with links to plug-ins can be found at quickphotoshop.com itself.

Within Elements itself, sans plugins, you'll find the basic contrast and color correction tools (Levels and Hue & Saturation, respectively), the full set of filters (including Unsharp Mask for sharpening), means for modifying selections (with the exception of Transform Selection and Color Range, unless plug-ins are downloaded), rotation, scaling, resizing, and transforming tools; and nearly every commonly used tool in the toolbar (with the laudable exclusion of the Bandaid tool, a tool that so effective that it is not.)

First, Adjust Backlighting is used to darken the entire background until the correction should be subtle and leave the user with the feeling that the overlap appears seamless. These tools, by themselves, can accomplish nearly every task done in the full version of Photoshop.

Amazingly, some features have been included in Elements that do not exist in Photoshop 7.0 and lower. Video frames can be acquired from movies as long as these movies are saved in the .avi (Windows) unless plug-ins are downloaded), rotation, scaling, resizing, and actions with links to plug-ins can be found at quickphotoshop.com. Video frames can be acquired from movies as long as these movies are saved in the .avi (Windows), .mov (Macintosh) and .mpg formats. Under File, select Import and then Frame from Video. Use the Browse button to find the file, and then click the Grab Frame button as desired.

An image stitching feature is included as well. In Elements it is called Create Photomerge under File. The limitation to this feature lies in its inability to stitch together more than a single row of images. The advantage, however, lies in its abilities to blend together two images so that the overlap appears seamless.

Automatic functions for straightening and cropping a tilted image are included under Image > Rotate. Depending on whether the image has clearly defined horizontal or vertical lines or features, this auto-correction saves time.

Three additions have been included for correcting images. Two relate to corrections commonly needed when taking photos on vacations. One is called Fill Flash, a function that brightens dark features lost in shadows. The name relates to a technique used by professional photographers to lighten up shadows. Typically, shadows are "filled" with light through the use of a flash, what is done when deep shadows are cast by strong sunlight. This feature works much like using the Curves tool to lighten only shadow values without affecting pixel values in the midtone to white range. The Fill Flash dialogue box also includes a saturation slider. This slider is included to increase color intensity after lightening, either because lightening reduced the intensity of color in the shadows, or because color intensity wasn't there in the first place. This tool can be tried on images in which shadows are too deep and without color saturation, such as those collected from a stereo microscope.

The other tool is called Adjust Backlighting, made for darkening bright features behind subjects of interest, such as distant mountains on a bright day. This feature works only on the lighter parts of the image. The Adjust Backlighting can be useful for flattening out uneven expanses of the same tonal range. Typically, the correction involves two steps. First, Adjust Backlighting can be used to darken the entire background until all features appear to have the same pixel value. Then, Levels can be used to move the white triangle to the left toward the histogram to brighten the overall image. This tool can be helpful for correcting unevenness in gels, blots, DIC/Nomarski images, phase contrast images, and TEM micrographs. Its efficacy depends entirely on the nature of the image, something that can very well be "hit or miss."

The third addition can be most helpful. That tool is called Color Cast, and it can be used with both grayscale and color images. Every imaging device, whether a camera or scanner, tends to add an overall color shift to the image. Thus, it follows that all color images should be color corrected using post-processing software, in opposition to the idea that the original image taken by a camera is the "truest" image. It's not. Most imaging devices need color correction in post processing software to return color to its correct hues.

Color Cast works by clicking on a part of the image that is either a slightly off-white color, a black (not recommended) or a light grey. The efficacy of this correction depends entirely upon where the eyedropper tool is placed when clicking. If the wrong location on the image is clicked on, the color correction is dramatic, then click cancel in the dialogue box and start again, only this time click at another location on the image. The correction should be subtle and leave the user with the feeling that the colors are much better even though it wasn't so evident at the start.

Note that this tool may not accurately auto-determine whether the part of the image clicked on is, indeed, white, or a light gray. If Color Cast repeatedly shifts colors dramatically when clicking on various
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Fig 2. An example of automated features for Photoshop Elements using the Photoshop for Science actions available at quickphotoshop.com. Confocal and darkfield actions are shown.

parts of the image that is white or gray, then opt for using the eyedropper tools in the Levels dialogue box. Under Enhance, choose Adjust Brightness/Contrast then Levels (or control/command + L). Choose the white or gray eyedropper tool in the lower left of the Levels dialogue box. Click on white or gray locations within your image, depending on the eyedropper tool you have chosen. This time the correction should work (see figure 1).

Elements also includes a batch conversion feature for converting files into various formats, specified dimensions, and into numeric order. This feature can be found under File, Batch Processing. It will convert every image file in a chosen directory. This is a good way to duplicate files in order to save the original for archiving purposes and to preserve magnification for drawing scale bars. Lower resolution JPEG files can be duplicated from original files for insertion into Microsoft products, such as PowerPoint and Word (be sure to pick the Maximum level for the amount of compression to preserve as much data as possible). Higher resolution TIFF files can be converted to PSD (photoshop) files for color/contrast correction, sizing to publications at specific output resolutions (the "dots per inch" settings) and for the production of figures. Finally, these can be made into TIFF files for publication purposes.

If you wish to make your images a part of a slideshow, an automated feature is included to convert images into the Acrobat format. Under File, choose Automation Tools and then PDF Slideshow. If all images to be included in the slide show exist in a directory, choose it in order to include all the image files in the slideshow. You can choose the transition effect with this feature, as well as autoplay.

If you choose to download and install step-by-step actions from the quickphotoshop.com website, you will see a welcome screen when Elements loads up (if this screen has been inactivated, it can be re-activated by clicking on Welcome under Window). The complete collection includes a screen that is divided into several tabs, each thematically related to functional areas in research. These are meant to be followed in step-by-step fashion, either with or without explanatory text, to make the image correction and enhancement process straightforward. These plug-ins are inexpensive, each harnesses the power of the complete version of Photoshop, and the step-by-step method makes the task of image correction painless (see figure 2).

In all, the features of Elements may very well make it the program of choice, even when labs have already purchased Photoshop. Elements provides enough features to make it comparable to the full version of Photoshop, it can be used by inexperienced or occasional users with added plug-ins, and it comes without the frills and frustrations of endless new versions.

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