

# Photoshop Layers

Layers are a fundamental feature of Photoshop that provide very powerful tools to manipulate images and graphics to develop a wide range of complex documents. Layers can be thought of as a stack of pages that can be opaque or transparent (or anything in between). They can embody a number of different concepts and objects and can be endlessly rearranged, combined, modified, imported from various sources, exported in different formats, etc. As with most things Adobe, Photoshop and layers operate pretty much the same on Mac and Windows, aside from specific keyboard shortcuts, window management, file system, etc.

The features of layers likely most relevant to photographers using Photoshop occasionally are: combining images using masks, and non-destructive editing. Photoshop originated as a tool for graphic design and basic image processing, not strictly for photography, so many features of layers apply to those fields rather than the basic photographic workflow (as opposed to Lightroom, which was developed around the workflow of photographers and therefore has more intuitive photography-specific tools).

A fundamental aspect of layers is the addition of a *layer mask* that controls the *opacity/transparency* of the layer contents. Images in layers can be modified directly by drawing or erasing, or with any of the adjustments, filters, etc. available in Photoshop, though this changes the actual layer contents. Any layer type can incorporate a mask that allows a layer to be modified non-destructively, enabling re-editing. There are two types of masks: *pixel* and *vector*. Pixel masks are grayscale (monochrome) images matching the size and resolution of the parent layer. The mask value determines the opacity at any point in the layer: 0=black=transparent=invisible, 100%=white=opaque=visible. Pixel masks can be edited like any other image, painted in using a brush, resized, etc. Vector masks are resolution-independent, meaning they incorporate analytical shapes rather than pixels and can be resized or reshaped without requiring resampling and therefore degradation of their appearance (and result in smaller file sizes). There's a strong relationship between masks and *selections*, but they are not the same. Selections (visualized by the "marching ants") delineate a region of interest in the image and can be applied to or converted to a layer or its mask and vice versa.

Layers are managed through the Layers panel that visually represents the document's structure: each item in the panel represents a layer in the document and includes a thumbnail representation of the contents. The top-most item is visible (modified by the mask and other attributes and indicated by the eye icon to the left of the thumbnail) and the layers can be rearranged. Transparency — global for the whole layer or selectively using a mask — controls the visibility of underlying layers. Many aspects of layers can also be managed with items in the Photoshop Layer menu. Other panels and menus operate on specific layer types. For example the Text and the Adjustments panels manage the details of those types of layers.

To operate on a layer it must be selected by clicking on the layer in the Layers panel (or keyboard shortcuts to access next or previous layer) and it will be highlighted. The Properties panel changes, with different tools available depending on the type of layer selected. Multiple layers can be selected and operated on together, grouped, or linked together (so the layers remain registered despite any movement or rescaling), converted to a smart object, deleted,

etc.

Layers can be created or imported into a Photoshop document in a number of ways: drag and drop from the file system, duplicated from another layer or open document, placed from another file (File > Place Embedded or File > Place Linked); embedded layers are included whole in the current document, increasing the file size accordingly. Linked layers use a pointer to an external file with a smaller version used as a placeholder in the document, saving file space in the current document, but requiring synchronization if the external file changes. From Lightroom one image can be opened as a single layer (Photo > Edit In > Photoshop...) or as a smart object (Photo > Edit In > Open as Smart Object...). Several images can be opened as separate documents or layers in a single document (Photo > Edit In > Open as Layers...).

Layers may be duplicated, merged, or deleted. Layers may be exported to documents separately or from Groups or Layer Comps. Lightroom provides a convenient round-trip facility for editing in Photoshop. When you send a raw image (or images) to Photoshop from Lightroom, it creates a new document file, not a *virtual copy*. When you save and close it in Photoshop, the new file automatically appears in the Lightroom catalog beside the unedited version. As long as you don't flatten the document (collapse the layers into a single layer), all the layers will be preserved (in a TIFF or PSD file type) and can be re-edited as-is.

[A bit of personal philosophy: I suggest — as with all software — to examine all the options in the Layers panel and its components and menus, and the Layer menu and sub-menu items to learn what options and capabilities are available. Many of the features are esoteric and rarely used by most people. But there are many not so obvious features that come in very handy in certain circumstances.]

#### Uses for layers

- Combine images: blend, montage, mosaic, etc. Stitch panoramas, HDR processing (which can also be done within Lightroom), focus stacking, etc.
- Non-destructive editing: apply adjustments and filters
- Overlay text, graphic shapes (vector objects)
- Apply image processing operations (average, median, maximum, etc.)

#### Layer types

- Image/pixel (raster): each layer is an image of fixed size and resolution
  - Background layer: special, non-editable (locked) layer, convertible to editable and vice versa
- Adjustment: apply modifications non-destructively (brightness/contrast, color balance, etc.)
- Shape (vector): resolution-independent objects, non-destructively editable
- Type/text (vector)
- Fill: solid color, gradient, pattern (non-pixel)

- Smart object: document treated as a layer
  - Embedded: all components of the smart object are in the current document (increased file size)
  - Linked: an external file, minimizes document file size
  - Can be different size/resolution from containing document, rescaling in parent document does not change content in smart object
  - Apply image processing algorithms to multi-layer smart object (Layer > Smart Objects > Stack Mode)

Layer masks: selectively apply opacity to any layer type

- Pixel: grayscale (monochrome) image that controls opacity (white=transparent, black=opaque)
- Vector: resolution-independent shapes delineate opacity
- Types are interchangeable and can have both for any layer
- Create from selections and vice versa
- Mask may be decoupled from the layer to adjust location, size, etc. independently

Layer organization

- Label/name
- Color: for labeling only, no effect on content
- Groups: sets of layers treated together (enables managing documents with a large number of layers)
- Layer comps: different document states (layer visibility, object location, etc.), export to separate files

Layer attributes

- Visibility: on/off
- Opacity (whole layer): 0-100%
- Fill: applies to shape layers, controls opacity of shape fill, not stroke, style, etc.
- Blend mode (how the layer modifies underlying content): lighten, darken, difference, etc. (algorithmic/mathematical operations)
- Filters (convert to smart object): blur, sharpen, etc. applied non-destructively
- Style: stroke, fill, shadow, etc.