

Photoshop CC (v21) Workflow for Photography for Windows

Including Bridge and Adobe Camera Raw

Based on Tim Grey's & Peter Bauer's, and RC Concepcion's books

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Notes

- ▶ Any words in *italics* are found on the Photoshop screen, or the keyboard. [] means type your stuff here.
- ▶ These procedures and techniques are not fixed; they are just a recommended starting point for a print photographer.

- **Getting Started:** (Installation/Preferences is the last section of this document.)
- **Downloading and sorting:** (Bridge launches if preference set: *General>Behavior>* *When Camera is ...*)
 - **Download** from a flash memory card reader using *Adobe Bridge Photo Downloader*. (Ps: *File>Browse* or *Alt+Ctrl+O*): (I use a chronological folder system with year, year-month.)
 - Connect a flash memory card reader and insert a card. (or: *File>Get Photos from Camera*.)
 - Select the device, *Import to: Other*. Find (or create New) Folder. *Download All*. [yyyy-mm]
 - Copy all new images from the card reader to a backup device, such as a HDD/SSD.
 - If the photos are properly saved, twice, use the camera to erase/format the memory card.
 - To **sort** images in Bridge:
 - Select *Window>Workspace*.
 - Try *Essentials (Ctrl+F1)* to locate a folder.
 - *View>List*. Top right sub-panel to *Preview*.
 - Rotate with ↻↺ on top bar, left. (clockwise: *Ctrl+]*, CCW: *Ctrl+[*).
 - Discard bad images using right-click> *delete*.
 - Select keepers for project by color labeling (*Ctrl+6-9*) or star rating (*Ctrl+1-5*).
 - Using the magnifying glass cursor, click point in image to use Loupe view.
 - To stack images, select with click, then *Shift/Ctrl+click*, then right click for *Stack> Group*.
 - Organize by moving keepers into a folder and renaming. Add metadata, if desired.
 - **Evaluate** images in Photoshop: (Use Navigation Tools at the top left of the window.)
 - Zoom in by selecting the *Zoom Tool (Z)* (magnifying glass), then, click the center point.
 - Also use *Ctrl+Spacebar* to activate the Zoom Tool.
 - Use *Alt+click* to zoom out. (or *Ctrl+ -*)
 - Click & drag will create a dashed box that will fill the window.
 - Double-click the *Zoom Tool* for 100% view (or, press *Z*, or *Ctrl+Alt+Spacebar*).
 - Double-click the *Hand Tool* to Enter to a fill view (or, press *H*, or *Ctrl+0*).
 - Use *Ctrl+Alt+0* for 1:1 pixel zoom level.
 - Use the *Hand Tool* (or hold *Spacebar*) to drag the image around within the window.
 - Use the Navigator Palette at upper right of screen for combo Zoom/Hand.
 - Use the ▲(s) or slider below preview to control main view (Zoom).
 - Drag the red box in the preview to quickly control the main view (Hand).
 - Click within the red box to center the main view.
 - To **open a saved image:** (Make sure there is a copy of non-raw images before altering.)
 - Double-click the raw file in Bridge to open Adobe Camera Raw (if preference set) or *Ctrl+R*.
 - Alternatively, right-click, select *Open in Camera Raw*, or select *File>Open in Camera Raw... .*
 - For JPEGs, either right-click, *Open With...>Photoshop CC*, or *File menu>Open/Enter in/to Ps*.
 - In Ps, *Filter menu>Camera Raw Filter* (more limited).

Adobe Camera Raw (v12)

ACR is an included plug-in for the Photoshop and Bridge in the CC series. Your edits do not alter pixels, only internal metadata or XMP sidecar files. ACR works with JPEGs and TIFFs, too. Try to get maximum detail, not a final print. Some adjustments are easier here than doing them in Photoshop. Adobe offers a free *DNG Converter* to convert any Raw negative to the universal format.

- Camera Raw can be the default for opening JPEGs & TIFFs if Camera Raw Preferences is set to *Always open JPEG (TIFF) files in Camera Raw*, & Ps, Preference, File Handling is *Prefer..*
- Raw Conversion can be initiated by double-clicking (an) image(s) while in Bridge (*Ctrl+R*).
- Click on the underlined description below the image for the **Workflow Options** window:
 - *Space*: Probably use *Adobe RGB* for 16 bits/channel color space (with Lightroom use *ProPhoto RGB*).
 - Before printing to inkjet, *Edit>Convert to Profile, Adobe RGB, 8 bit*.
 - *Depth*: Generally start with 16 bit (except JPEGs, CMYK, or quantity is a problem).
 - *Size*: If planning a large layout, interpolate up the *Size* here.
 - *Resolution*: Should be between 180-360 ppi, with 240 or 300 ppi most common.
 - *Sharpen For*: probably *None* here. Sharpen just before final output.
 - *Smart Objects* are like an alias in a Mac. They avoid losing data, and are reversible, but you cannot do anything to them itself that involves changing the content of the layer (e.g. Content Aware Fill).
 - Use *File>Place* to add a Raw file on a Photoshop document. Other than resizing, you may need to use *Edit Contents* from the Layers Menu. Leave unchecked unless resizing.
 - To view the original image before adjustments in a panel, *Preview*, or press *P*.
- The **Tool Bar** resides above the image. From left to right, the tools are:
 - **Zoom (Z), Hand (H), White Balance (I), Color Sampler (S), Target Adjustment Tool (T), Crop (C), Straighten (A), Transform (Shift+T), Spot Removal (B), Red Eye Removal (E), Adjustment Brush (K), Graduated Filter (G), Radial Filter (J), Preferences (Ctrl+K), Rotate CCW/CW (L/R)**.
 - The Zoom Tool can be selected with *Ctrl+spacebar*, then draw a box to expand.
 - The Hand Tool can be selected with the spacebar.
 - Hold down the mouse button on *Crop* icon for options, such as *Clear*.
 - Use the *Spot Removal Tool* with *Visualize Spots* (lower right). Either click or drag the area. *Enter*.
 - Avoid using *Crop (C), Straighten (A), Transform (Shift+T), Spot Removal (B), Red Eye Removal (E), Adjustment Brush (K)*, until Raw converted.
- Camera Raw's **Histogram**, up on the right, is far more important than the one in Photoshop itself.
 - The five sections left to right are: | *Blacks* | *Shadows* | *Exposure* | *Highlights* | *Whites* |.
 - Tip: when shooting Raw, try not to leave empty pixels near the right side, expose to the right (ETTR).
- **Basic** panel (Aperture icon on right panel and *Basic* palette below):
 - Select *Treatment* for *Color* or *Black & White*.
 - If you have some *Profiles* as presets, select and *Browse*.
 - To reset a slider to its default value, double-click the slider pointer. To reset all, click *Default*, or
 - Click either \ominus or \oplus on the working slider, all others reset, and it self-adjusts.
 - Use *White Balance* to adjust the overall color. Calibrate your monitor to D65 (6,500°K), Gamma 2.2.
 - If *As Shot* is off, try *Auto* or one of the presets.
 - Use *Temperature & Tint* for White Balance:
 - *Temperature* is in °Kelvin, lower is warmer, higher is cooler.
 - Leave the *White Balance* drop-down on *As Shot* or *Custom*.
 - Select the White Balance Tool (*I*) (half-full eye-dropper up on left).
 - Click on something that should be neutral gray. (*As Shot* changes to *Custom*.)
 - Adjust the *Temperature* and *Tint* as desired (or wait until later).
 - The next eye-dropper (with \oplus aiming symbol) lets you click places to get RGB values.
 - In the Tone sub-panel, try *Auto* for starting adjustments, or *Default* to reset the sliders.
 - Use *Exposure* to bring out the details on the mid-tone portions of the image.

- Use *Contrast* to spread the range of tones from dark to light. (*Tone Curve* is better.)
- Use *Highlights* to adjust the highlight details towards the right wall.
 - Select the highlights/right ▲ (O) above the Histogram.
- Use *Shadows* to adjust the shadow details towards the left wall.
 - Select the shadows/left ▲ (U) above the Histogram.
- Use *Whites* to regain detail in highlights at the right wall (White Point).
 - Hold *Alt* key while adjusting right until some highlights appear in the black.
 - Maximize the white point without clipping in the highlights.
- Use *Blacks* to regain detail in shadows at the left wall (Black Point).
 - Hold *Alt* key while adjusting left until some blacks appear in the white.
 - Maximize the white point without clipping in the shadows.
 - Deselect shadows and highlights ▲ clipping warnings (U)(O).
- Use *Clarity* for useful mid-tone contrast, + great for brick walls, - great for skin.
- Use *Dehaze* is magical for hazy scenes to add contrast and clarity.
- Use *Vibrance* for an intelligent, but subtler, version of *Saturation*, affecting least-saturated areas.
- Avoid heavy *Saturation* now, which affects the entire image.
- Use the Y box (below image, right) or press (or cycle) Q to compare adjustments to the original.
- Avoid using ***Tone Curve*** panel (graph icon) for now. Use it in Ps.
 - One tab is *Parametric*. The sliders move the curve on the upper right side to the lower left side.
 - Another tab is *Point*. Click on the curve where you want a(n) adjustment(s) and drag up/down.
 - You also may use the *Target Adjustment Tool* (TAT) to click and drag up/down on the image.
 - Dismiss the TAT with *Done*, or select another tool.
- Use the ***Detail*** panel (peaks icon) for sharpening and noise reduction. (Use *Zoom Tool* ☞ at 100+%.)
 - Still, no *Sharpening* yet, so skip this slider, unless you are not going to Ps, then do after *Noise Reduction* adjustments. (For all sliders, hold the *Alt* key, pull left, then adjust right to get just edges.)
 - Start with a high *Amount* (~40), keep *Radius* low (0.5-1.0), *Detail* low (~30), use *Masking* (~15).
 - Reduce *Amount* as desired, then sharpen if this is the final output.
 - *Noise Reduction* sub-panel:
 - The *Luminance* sliders are for tonal variations (~50/50/0). (Double-click *Zoom Tool*)
 - The *Color* sliders are for color noise (~25/50/50). (To re-fit screen, *Ctrl+0*)(Q to compare.)
- Use the ***HSL Adjustments/Black & White Mix*** panel for Hue, Saturation, and Luminance. (Use Ps HSL)
 - Click the *Targeted Adjustment Tool* (TAT)(5th on Tool Bar).
 - Click on color to adjust, drag right to increase, left to decrease.
 - Double-click the slider pointer to reset, or click *Default* to reset all sliders.
- Use the ***Split Toning*** panel (two bars) to separately adjust the highlights and shadows hue and saturation.
- If needed, apply ***Lens Corrections*** for *Lens Profiles*, *Distortion*, *Chromatic Aberrations*, & *Vignetting*.
- Again, apply ***Effects*** (fx icon) for *Grain* or *Post Crop Vignetting*.
- Use ***Presets*** to save adjustments by selecting the folded corner page, bottom right. (includes Lr's presets)
- To **complete Raw Conversion**, do one of the following across the bottom:
 - Click (*Alt+*) *Save Image...* to convert and save image (w/o dialog).
 - Click the workflow options blue line and *Open in Photoshop as a Smart Objects*. (see next page.)
 - *Open Image* becomes *Open [Smart] Object*.
 - (*Alt+*) *Open Object* becomes *Open Copy*.
 - *Open Image* combines your changes and opens copy in Ps.
 - Click *Cancel* to close Camera Raw without adjustments.
 - *Alt+Cancel*>*Reset* restores the previous settings.
 - Click *Done* to apply changes without opening.

Photoshop CC

- **Anytime: Oops!**
 - To **undo** a step, use *Edit>Undo (Ctrl+Z)*, or **redo**, use *Edit>Redo (Shift+Ctrl+Z)*.
 - To use the History palette, select *Window>History*.
 - To revert an area to a previous state, select the **History Brush (Y)** on the Tools Panel.
 - To reduce the effect of a filter or adjustment, select *Edit>Fade...* as your next step. Set level.
 - Double-click a slider (Δ) or title to reset it to its **default value**.
 - In most dialog boxes, holding down the *Alt* key changes the *Cancel* button to *Reset (all)*.
 - To delete a layer on the palette, click on it, and then press *delete*.
- **Understanding Smart Objects:**
 - Smart Objects are layers that contain image data from raster or vector images. Smart Objects preserve an image's source content with all its original characteristics, enabling you to perform **nondestructive editing to the layer**. An "X" covers the image, drag & resize, then right-click>*Place*.
 - You can embed the contents of an image into a Photoshop document (*Choose File>Place Embedded*) and also create Linked Smart Objects whose contents are referenced from external image files (*Choose File>Place Linked*). Linked documents do not add to the file size.
 - The contents of all Linked Smart Object are updated when its source image file changes.
 - Linked Smart Objects are distinct from duplicated instances of a Smart Object within a Photoshop document. With Linked Smart Objects, you can use a shared source file across multiple documents.
 - With Smart Objects, you can:
 - Perform nondestructive transforms, scale, rotate, skew, distort, perspective transform, or warp a layer without losing original image data or quality because the transforms don't affect the original data.
 - Perform nondestructive filtering. You can edit filters applied to Smart Objects at any time.
 - Edit one Smart Object and automatically update all its linked instances.
 - Apply a layer mask that's either linked or unlinked to the Smart Object layer.
 - Try various designs with low-res placeholder images that you later replace with final versions.
 - **You can't perform operations that alter pixel data**—such as painting, dodging, burning, cloning, or Content Aware Fill—directly to a Smart Object layer, unless it is first converted into a regular layer, which will be rasterized. To perform those operations, you can edit the contents of a Smart Object, clone a new layer above the Smart Object layer, edit duplicates of the Smart Object, or create a new layer.
 - Note: When you transform a Smart Object that has a Smart Filter applied to it, Ps turns off filter effects while the transform is being performed. Filter effects are applied again after the transform is complete.
- **Understanding Layers:**
 - Layers are like looking at an old overhead projector with transparencies. You can mask off parts or hide them. Each adds to the size of the file, hence the importance of RAM.
 - View the layers from the top down. The top layer covers all layers below, with masks selecting which parts are not visible. You may drag layers to change the order, except to go below the *Background* layer.
 - **About layer and vector masks.** You can use masks to hide portions of a layer and reveal portions of the layers below. You can create two types of masks:
 - Layer masks are resolution-dependent bitmap images that are edited by painting or selecting.
 - Vector masks are resolution independent and are created with a pen or shape tool.
 - Layer and vector masks are nondestructive, which means you can go back and re-edit the masks later without losing the pixels they hide.

- Both the layer and vector masks appear as an additional thumbnail to the right of the layer thumbnail. For the layer mask, this thumbnail represents the grayscale channel that is created when you add the layer mask. The vector mask thumbnail represents a path that clips out the contents of the layer.
 - To hide a layer mask, to see the entire layer, *Shift*+click the mask thumbnail (red “X” appears).
 - To delete a layer mask, drag it down to the *Trash* icon.
 - To create a layer or vector mask on the *Background layer*, first convert it to a regular layer (*Layer > New > Layer from Background*).
- **Other Nondestructive Editing Techniques (besides Smart Objects):**
 - Nondestructive editing allows you to make changes to an image without overwriting the original image data, which remains available in case you want to revert to it. Because nondestructive editing doesn’t remove data from an image, the image quality doesn’t degrade when you make edits. You can perform nondestructive editing in Photoshop in several ways:
 - **Working with Adjustment Layers.** Adjustment layers apply color & tonal adjustments to an image without changing pixel values.
 - **Filtering with Smart Filters.** Clone Stamp, Healing Brush, and Spot Healing Brush tools let you retouch nondestructively on a separate layer. Be sure to select Sample All Layers from the options bar (select Ignore Adjustment Layers to ensure that adjustment layers won’t affect the separate layer twice). You can discard unsatisfactory retouching, if necessary.
 - **Editing in Camera Raw.** Adjustments to batches of raw, JPEG, or TIFF images preserve the original image data. Camera Raw stores adjustment settings on a per-image basis separately from the original image files.
 - **Opening Camera Raw files as Smart Objects.** Before you can edit Camera Raw files in Photoshop, you must configure settings for them with Camera Raw. Once you edit a Camera Raw file in Photoshop, you can’t reconfigure Camera Raw settings without losing the changes. Opening Camera Raw files in Photoshop as Smart Objects enables you to reconfigure Camera Raw settings at any time, even after you edit the file.
 - **Cropping Nondestructively.** After you create a cropping rectangle with the Crop tool, select Hide from the options bar to preserve the cropped area in a layer. Restore the cropped area anytime by choosing *Image > Reveal All* or by dragging the Crop tool beyond the edge of the image. The *Hide* option is unavailable for images that contain only a background layer.
 - **Masking.** Layer and vector masks are nondestructive because you can re-edit the masks without losing the pixels they hide. Filter masks let you mask out the effects of Smart Filters on Smart Object layers.
- **Understanding the Interface:**
 - The **Tool Bar** is down the left edge (click ... for two columns).
 - The **Tool Options Bar** is on top horizontally.
 - The **Panels** section are on the right column.
 - Common choices for Panels are *Adjustments* and *Layers*.
 - You might Close the top Tab Group via the ☰ pull-down menu.
 - At the bottom of the Panels are create and delete layers icons.
- **Basic Adjustments:**
 - **Rotate and Crop:**
 - If needed, rotate using *Image>Image Rotation*.
 - To *View* menu>*Fit on Screen*, press *Ctrl+0* (zero).





- To preserve the original image, make a copy: *File>Save As*, and rename the file.
- **Corrective Cropping:** (Cropping should be first, after rotating, to use the History Brush/Palette.)
 - Select **Crop Tool** from Tools Panel (4th down)(C). (The Options Bar appears on top, click *Clear*.)
- Click **Straighten** on the Options Bar.
 - Click on end of a line that should be horizontal/vertical, drag to the other end, release. Enter.
 - Or, move the cursor outside the cropped area.
 - A curved two-way arrow appears (and a center-point target appears, click to move).
 - Click and drag to correct.
- Enter *Width & Height* entries on the Options Bar, if desired.
 - A ratio can be set by entering it as W=4, H=3, for 4:3 ratio, etc.
 - ⇌ Reverses numbers.
 - Adding a Resolution causes interpolation.
 - If constraining for printing, try 300 ppi, or a similar fraction of printer resolution.
 - Click the (▼) on the right of the Crop icon for preset dimensions.
- Photoshop Preferences>*General>Image Interpolation: Bicubic Automatic*.
 - Otherwise, *Bicubic Sharper*, if reductions.
 - If large size increases are made, use *Bicubic Smoother*.
- Uncheck *Delete Cropped Pixels*.
 - If empty areas are created by straightening, etc, try *Content-Aware*.
- To reset the crop box and settings, click the ↶ icon.
 - Click and drag a box. (/ key disables shield shading outside the crop box.)
 - Use mid point handles to adjust only one side.
 - Hold *Shift* key while dragging a corner to retain aspect ratio.
 - Hold *Alt* key while clicking center post and drag out.
 - Select *View>Show>Grid*. Cycle with *Ctrl+?*
- When complete, right-click image to *Crop/Cancel*, or select *Commit* button (☑) on the Crop Tool Bar (right end), or double-click in the cropped image, or press *Enter*.
- Cancel is (⊗) on the Crop Tool Options Bar, or press *Esc*.
- When you select a tool from the *Adjustments* panel, a new layer is created.
- If *Alt+click>Properties*.
- **Transform selections:**
 - With the selection made, go to the *Select* menu>*Transform Selection*.
 - A box with handles appears around it.
 - (*Shift+*) Drag the handles to transform (and constrain aspect ratio), or click outside one to rotate.
 - Or, resize from the center point, hold *Alt* while you drag.
 - To inverse the selection, go to *Select* menu> *Inverse (Ctrl+Shift+I)*.
 - To save the selection, go to *Select* menu>*Save Selection* (in .PSD), or *Layer>New>Layer Via Copy*.
- **Tone and Color Adjustments:** (If you have not, yet; calibrate your monitor.)
 - **Auto corrections** are available for Tone, Contrast, at *Image>Adjustments*, after creating a layer.
 - (If converting 16 bit images to 8 bit, first flatten. *Layer>Flatten Image*.)
 - Avoid *Image>Adjustments>* controls, and *Image>Adjustments>* controls because they are permanent and destructive, use the *New Adjustment Layer* on the *Layer* menu..
 - **Brightness/Contrast** control: (Provides control over shadows and highlights.)
 - Select *Adjustments* panel>*Brightness/Contrast* (sun/1st) icon on the panel. 2nd Icon for *Masks*.
 - Leave *Use Legacy* box unchecked.
 - Try the *Auto Tone* button, if the colors are good.
 - Adjust Contrast first, then Brightness. *OK*. (Ignore effect on colors.)


- To reset either slider, double-click on the title: To reset all, click the CCW arrow.
- Adjustments>**Levels** control: (Provides Brightness/Contrast control over shadows or highlights.)
 - Avoid *Image>Adjustments>Levels* (*Ctrl+L*).
 - Select *Adjustments* panel>*Levels* (fire/2nd) icon on the panel.
 - Try *Auto Levels*. Hold *Alt* while clicking *Auto* to get more options.
 - Clipping in the highlights (right) is more of a problem than the shadows (left).
 - Gapping may occur in 8 bit images where little/no pixels exist (Posterization).
 - Improve posterization with *Edit>Fade, Mode to Luminosity*. *OK*.
 - Eye Droppers are available for the black, gray, and white points. Select and click.
 - Move the Black & White pointers (▲△) inwards to the start of the climbing graph.
 - The Middle Tone slider is effectively a brightness control (left lightens). *OK*.
 - For low contrast images, use clipping preview, by double-clicking the Layer.
 - Hold the *Alt* key while sliding the White pointer left until pixels show.
 - Repeat for Black (right).
 - Re-adjust the Middle Tone (w/o *Alt* key) for brightness. *OK*.
 - Click the eye ☞ icon below to view the previous state.
- **Curves** can do everything that *Levels* does, and more. (See Advanced Tonal Adjustments ahead.)
- **Color Adjustments** (overall):
 - **Vibrance:** for low saturated colors. 2nd Icon for *Masks*.
 - **Hue/Saturation/(Lightness):**
 - Select *Adjustments* panel>*Hue/Saturation* (2nd row) on the panel or *Layers>●>Hue/Saturation*.
 - (opt) Name the new layer (“Hue/Saturation 1”).
 - Add/Subtract Eyedroppers can be used to adjust the range of colors (or change *Master* to a hue).
 - Drag right/left to increase/decrease saturation. (*Ctrl*+drag to change hues.)
 - Do not overdo *Saturation* (+20 or more). *OK*.
 - **Color Balance:** (think color wheel)
 - Select *Adjustments* panel>*Color Balance* (scales icon), or *Layers>●>Color Balance*.
 - (opt) Name the new layer (“Color Balance 1”).
 - Select a *Tone*.
 - *Preserve Luminosity* to prevent the image from darkening
 - Select a red, green, or blue channel (opposites are on the left side).
 - Start with the biggest problem first, using the slider, then with values ▲.
 - Warmth is sometimes desirable, so add red, magenta, or yellow.
 - Sometimes adjustments are desired in the Shadows and Highlights ☉, repeat. *OK*.
 - **Black & White:**
 - Select *Adjustments* panel>*Black & White* (B&W box, duh!), or *Layers* panel>●>*Black & White*.
 - (Optional) Name the new layer (“B&W 1”).
 - Try the *Preset:* filters.
 - Try the *Targeted Adjustment Tool* 🖱 and drag left/right to darken/lighten colors.
 - Try *Auto* for a start, or if skin tones, try the *Red Filter*.
 - **Photo Filter:**
 - Select *Adjustments* panel>*Photo Filter* (camera icon), or *Layers* panel>●>*Photo Filter*.
 - (Optional) Name the new layer (“Photo Filter 1”).
 - *Preserve Luminosity* to prevent the image from darkening.
 - Select at *Filter* effect, or use the *Color* picker.
 - **Text:**
 - Select the *Text* tool (*Horizontal* or *Vertical*)(*T*).

- On the *Tool Bar*, select the font, style, point, alignment, and color choices.
- To commit to the text, press *Ctrl+Enter* to apply to layer. (*Enter* starts new paragraph.)
- **Cleanup Adjustments:** (Clean up before enhancing.) (The following is in no order:)
 - Create a **New Layer** first: *Layer>New>Layer* ($\hat{u}+Ctrl+N$), or (*Alt+*) click the sheet with a folded back corner on the bottom of the Layers Palette.
 - Type a layer name (opt). *OK*. (It should go just above the Background Layer, and if any Adjustments Layers, they go above this one.)
 - The **Clone Stamp Tool** (No blending done.) (*S*) (Rubber stamp icon on left side.)
 - The Clone Stamp is for copying color & texture. For texture only, use Patch Tool.
 - To improve dark spots, try Mode:Lighten (& visa versa), then reduce Opacity.
 - Click the ▼ after Brush and start with a hardness of ~ 50%- ($\hat{u}+[/math> down, $\hat{u}+]$ up).$
 - Avoid using Flow and Airbrush controls. Leave *Opacity* at 100% & Aligned .
 - You must select *Current & Below* (or *All Layers* if a composite image) option.
 - Turn off (darken) the *Include Adjustment Layers When Cloning* icon \emptyset .
 - Select a clone source by *Alt+click*.
 - Place the cursor over the area to fix. Press the [key to reduce size,] to increase.
 - Either click, or click & drag areas (renew clone areas often if long fixes).
 - To undo fixing, select the Eraser Tool (*E*), and paint over the bad fix. (If the layer has not been closed, you can use *Ctrl+Z*, or click on the state on the History palette.)
 - The **Healing Brush Tool** (*J*) (plain band-aid icon on left, if n/a, right click on 4th icon.)
 - Repeat above New Layer steps (opt.).
 - Select the Healing Brush icon (*J*).
 - Use the bracket keys to adjust the brush size (*/* narrower, *]* wider).
 - Click the ▼ by Brush to insure Hardness is 100% (softening in done automatic).
 - Leave *Normal* and *Sampled* set (*Replace* = Clone Stamp tool).
 - *Aligned* box unchecked, probably.
 - In the Sample box, select *All Layers*.
 - The icon (\emptyset) should be set to *Turn on to ignore adjustment layers while using ...*
 - Select a healing source by *Alt+click*.
 - Place the cursor over the area to fix.
 - Either click, or click hold+drag areas.
 - To avoid completely replacing spots, set Opacity at about 50% (i.e. skin lines).
 - The **Spot Healing Brush Tool** (*J*)(band-aid w/halo) does not need a distant source.
 - Normally, *Type: Proximity Match* (w/*Diffusion*), unless contrast are adjacent, then *Create Texture*.
 - Keep the brush small. For skin spots, *Hardness: 0%*, *Opacity: 100%*.
 - The **Patch Tool** (*J* or *Shift+J*)(hairy square) is a Healing Brush you draw a loop around the spot.
 - The Patch Tool is for copying texture only; use Clone Stamp for color & texture.
 - Create a Duplicate Layer of your Background.
 - Click & drag the thumbnail for the Background layer (right side) down to the *Create a New Layer* icon (\square), next to the *Trash Can*. It goes highlighted.
 - Or, from the Menu, click *Layer>Duplicate Layer* (“Background copy”).
 - Select the repair area by click hold+drag a loop. (Loop closes upon click release)
 - Check that Source is displayed on the Options Bar.
 - Click & drag the area to an area that is your source, then release.
 - Do not use the *Transparent* option on photos.
 - *Content-Aware* can clean up imperfections.

- **The Puppet Warp Tool**
 - The Puppet Warp Tool is for moving/distorting subjects parts (such as bending an elbow).
 - Use any tool, such as the *Lasso* or *Color Range*, to select an area to modify.
 - Create a layer with *Layer>New>Layer via Copy (Ctrl+J)*, or double-click layer.
 - Hide the selection layer by clicking the eye on the upper layer.
 - Click on the lower layer to make it active. Clone or copy/paste over the select pixels.
 - Click on the upper layer's eye, then title or thumbnail.
 - Select *Edit>Puppet Warp*. Click on the pivot points to place pins.
 - On the Options Bar, choose a *Mode*, such as *Normal*.
 - Click then drag the pins. Click and *Delete/Backspace* to remove a pin. *Enter*.
 - To finesse the image, try the *Liquify* filter with a large brush *Forward Warp*.
- **The Red Eye Tool** replaces red with black when flashes reflect in the eye.
 - Select the Red Eye Tool (crosshairs with eye).
 - Click on the red eye, if unsatisfactory, undo, then:
 - Adjust Pupil Size to 50%.
 - Adjust Darken Amount to 50%.
 - If other than red eye, use the Brush Tool.
 - Set foreground color to black.
 - On the Alts Bar, select Luminosity blending mode and Opacity to about 50%-.
 - Use a Brush diameter slightly larger than the pupil.
 - Adjust hardness to about 75%.
 - Click on the eye.
- **The Dust and Scratches Tool.**
 - Select the Lasso Tool (*L*), select a small *Feather*.
 - Draw a loop around the imperfection.
 - Select *Filter>Noise>Dust & Scratches*. (*Ctrl+H* to hide the marching ants.)
 - Increase *Radius* until the grain is lost, then back off.
 - Increase *Threshold* until imperfection disappears.
 - Drag the loop to similar imperfections, then press *Ctrl+F* to fix more.
 - Press *Ctrl+D* to Deselect.
- **Content-Aware Scale and Fill:**
 - To fill empty space, make a selection using one of the selection tools.
 - The Polygonal Lasso Tool can be clicked outside the image to fill and automatically align the edge.
 - To change to a new aspect ratio and fill in the empty space, create a new document (and tab), select the *Move Tool*, drag the image onto the new document (tab), *Zoom* to see white space, resize (*Free Transform*). *Enter*.
 - Go to the *Edit* menu>*Fill (Shift+F5 or Shift+delete)*. *Content: Content-Aware. OK*.
 - Content-Aware Scaling: (For re-sampling an aspect ratio, preserving subject while distorting background.)
 - Make a selection if only a portion of the image will be affected.
 - Double-click the background layer (before flattening), then rename.
 - Click *Image>Canvas Size* (if increasing the size of the image).
 - Click *Edit>Content-Aware Scale*.
 - Drag the center side anchor points to resize. *Enter*.
 - If people are in the image, on the Options Bar change *Protect* to skin tones.
 - Hold the *Alt* key while scaling from the center.
 - (Optional, but not necessary if saving in PSD format.) *Layer>Flatten Image*.

- **Advanced Tonal Adjustments:** (If you have not, yet; calibrate your monitor.)
 - For tonal adjustments, **create a duplicate layer** (not adjustment layer) of the Background Layer, either:
 - Click & drag the thumbnail for the Background layer (right panel) down to the *Create a New Layer* icon (□), next to the Trash Can. It goes highlighted, or:
 - *Layer* menu>*Duplicate Layer* (*Ctrl+J*) or right-click.
 - The **Shadow/Highlight** control is good for high contrast or weak details in shadows, such as in back-lighting problems. Unlike ACR, these adjustments are permanent, unless you create a Smart Object.
 - *Show More Options*.
 - *Tonal Width* should be about 20-50%.
 - *Radius* about 10 (small image) to 30 pixels (large image).
 - *Color Correction* (*Brightness*) is a saturation control for adjusted areas. Use after *Amount(s)*.
 - *Mid-tone Contrast* compensates for reduced contrast from enhancing details. (Like *Curves*)
 - Generally, leave both *Clip* settings at 0.01%. Don't select *Save As Defaults*. *OK*.
 - The **Curves control** Shifts all pixels near a tonal value, not just one of four sections.
 - Select *Adjustments* panel>*Curves* (curve on grid icon) ... (opt) Type a layer name ("Curves 1").
 - The first time, click the *Curve Display Options* ▼.
 - Generally chose the *Light Alt* and 10% Increments.
 - Show items (four).
 - Click the ▲ to hide the options.
 - If low contrast, initially *Show Clipping*.
 - Pull in each ▲△ (w/*Preview* on), to minimize pixels,.
 - Uncheck *Show Clipping*.
 - Eye Droppers are available for the black, gray, and white points. Select and click.
 - Click & drag on the image area needing adjustment. An anchor circle appears.
 - Active by clicking on the ⚡ icon on the left side of the *Curves* dialog.
 - Start with the quarter grid vertical lines, and drag up (lighten) or down (darken).
 - A classic S-Curve would pulldown the left side middle to Output: 55-60.
 - Pull up the right side middle to Output: 195-205, yielding more contrast.
 - When the point is found, *Ctrl*+click to set an anchor point (1 to 3, up to 14).
 - Fine tune by clicking an anchor point then adjusting with ⬆️⬇️ keys (or mouse).
 - To correct a specific area on the image, *Ctrl*+click on it to create an anchor.
 - With either the Target Adjustment Tool (TAT) or the Eyedroppers, right-click on the image to change the sample grid size (3x3, 5x5, 11x11 etc. More megapixels=larger grids.)
 - (If undesired color Shifts occur, click the ▼ by *Normal* on the Layers Palette {right side}. Select *Luminosity* for the *Blending mode*.)
 - In grayscale images, the input/output gradients are reversed: light→darks (*Display options* setting).
 - Click *OK* when done. If using as a Smart Object, Smart Filters are available.
 - The **Exposure** control can be used for adjusting merged images to produce a high dynamic range.
 - Select *Adjustments*>*Exposure*. (+/- box/4th icon) ... (opt) Type a layer name ("Exposure 1").
 - *Offset* and *Gamma* are mainly for 32 bit images.
 - The **Dodge and Burn tools:** (Not recommended, but another method can be used.)
 - Create a New Layer first: *Alt*+click the sheet icon down on the Layers Palette.
 - Type a layer name (such as Dodge & Burn)(opt). *OK*.
 - For *Blending Mode*, select *Overlay* for strong, or *Soft Light* for subtle effects.
 - *Fill with Overlay*-neutral color (50% gray). *OK*.
 - Select the *Dodge Tool* ⌘ or the *Burn Tool* ⌘ from the Tools Panel (O).

- Press D to set the colors to their default values (or click the bottom left icon).
 - Press X to swap between black and white, if desired.
 - In the Options Bar, select a *Brush Tip Size* (~50+ pix), 0% *Hardness*, *Range* mode, *Exposure* between 15-20%.
 - Paint with white to lighten, black to darken, keeping the mouse button down for each increase in *Exposure*.
 - As with any layer, undo by removing it from the *History* palette (Y), or use the *Eraser* (E).
- **Advanced Adjustments with Adjustment Layers and Masks:**
 - Make a New Adjustment Layer by selecting the *Create New Fill or Adjustment Layer* icon on the Layers Palette (right panel, bottom)() , or *Layer* menu>*New Adjustment Layer*. Then select the adjustment.
 - Make an overall adjustment (see types below), then go to *Image* menu>*Adjustments*>*Invert* (Ctrl+I) to invert the mask to black, hiding the adjustment. Select a brush and paint back the areas you want the adjustment to apply (reveal). Repeat these steps for other adjustments.
 - To switch the brush to hiding (black), press “X”, or select the *Set Background Color* tool ().
 - Alt+clicking on a Layer’s Mask icon reveals your brush work.
 - To duplicate a Layer Mask, Alt+click and drag the previous mask icon to a another layer. A double arrow appears.
 - For **Hue/Saturation/(Lightness) controls:**
 - The two color bars in the dialog box represent the colors in their order on the color wheel. The upper color bar shows the color before the adjustment; the lower bar shows how the adjustment affects all of the hues at full saturation.
 - Select a color with the *Targeted Adjustment Tool* ().
 - Click and drag for *Saturation*.
 - Ctrl+click for *Hue*.
 - Slide the *Saturation*, or *Lightness* pointer right to see more color or brightness in the image.
 - For individual channel adjustments (RGB) use **Curves**: (Repeat following for each channel.)
 - Select a color channel, or *RGB*.
 - The three eyedroppers are for selecting a black, gray, or white point.
 - Click and drag in that colors area to see where the circle is on the curve. Ctrl+click.
 - Drag up for more of that color, down for more of the opposite color.
 - Fine tune by placing multiple anchors on the curve, avoiding tonal Shifts.
 - Repeat the above steps for other channels, if desired.
 - For **Selective Color Options:** (Fine tuning.)
 - Leave *Relative*  selected.
 - Adjust sliders to adjust preset colors to more or less (opposite colors).
 - (Improving skies means selecting Blue or Cyan and reducing Magenta.)
 - *Black* is like adjusting Brightness.
 - For **Photo Filters:**
 - In the *Properties* sub panel, select a photographic filter for an overall cast.
 - **Making Selections:**
 - After making a selection, to hide the “marching ants”, press Ctrl+H.
 - To deselect a previous selection, press Ctrl+D.
 - You can add to a selection by holding the *Shift* key or subtract from a selection by holding the *Alt* key before clicking.
 - A non-destructive method is available by using **Cropped Area** control:
 - Double-click the Background image layer on the Layers palette (Name opt.), OK.

- On the Crop Tool Bar, select  *Hide* (which turns off Perspective & keeps pixels).
- Later, to change you mind, use the Move Tool (top left)(*V*) to adjust the crop.
- To restore the full image, select *Image>Reveal All*. (n/a JPEG, so use .PSD or TIFF)
- To select the **Marquee Tool**, click the dotted box on the Tools Panel (*M*).
 - Right-click to select the *Rectangular* or *Elliptical* tool (*Shift+M*):
 - If using the Elliptical Tool, *Anti-Aliased* box (smooth curves/diagonals).
 - Anti-aliasing softens edges & should be used on every selection, except rectangles.
 - Use *Anti-aliasing*, rather than *Feathering*, unless a soft special effect is desired.
 - Feathering cause pixels (squares) to have a soft, faded selection.
 - Optional: Feathering should be 0-1 pix, Style *Normal* or *Fixed Ratio/Size*.
 - Either, on the Options Bar, select:
 - *Normal* (single area) (normally darkened).
 - *Add To Selection* (multiple adjoining areas),
 - *Subtract From Selection* (remove area within area).
 - *Intersect With Selection* (area where two areas overlap).
- Or, use the keyboard shortcuts:
 - Click on one corner of the desired crop & drag a box to opposite corner.
 - Center click & after starting drag, press *Alt* to center selection.
 - Before starting a drag, hold *Shift* to constrain proportions.
 - Combine *Shift+Alt* after click & drag to center a square or circle.
 - To both add and constrain, *Shift*+drag, release *Shift*, re-hold *Shift*, and continue drag.
 - Hold *Alt* before click & drag subtracts from existing selection.
 - During a drag, hold Spacebar to get the Hand Tool to move the selection.
- If cropping, click *Image>Crop*. (Alterations before cropping are n/a in History Brush.)
- To select the **Lasso Tool** (freeform), click the rope icon near the top of the Tools Panel (*L*).
 - Zoom in to see desired edges (see third • on page one).
 - The four selection boxes are the same. 0-1 pix and *Anti-Aliased* selected.
 - If you need to go outside the area, hold the Spacebar, click and drag the Hand Tool.
 - Click and drag around to the start point, release. (Release sooner, you get a line back.)
 - For straight lines, click Lasso Tool and then **Polygonal Lasso Tool** (*Shift+L*).
 - Holding *Alt* with the Lasso Tool also yields the Polygonal Lasso Tool.
 - Click on the start point, move the cursor, and a line will follow.
 - Click, don't drag, on each new point. Repeat. (Plays connect-the-dots.)
 - Hold *Alt* to temporarily change to regular Lasso, then draw.
 - Click, move, and then hold *Shift* to limit angles to multiples of 45°.
 - *delete* erases the last anchor. *esc* erases all points.
 - Double-click back at the starting point to finish the selection.
 - For contrast edge finding, click the **Magnetic Lasso Tool** (*Shift+L*).
 - Good only with high contrast between foreground and background.
 - Use the bracket keys ([narrower,] wider) to specify Width of the brush.
 - Use narrower for detailed edges, wider for smooth edges.
 - For *Edge Contrast*, use a lower setting for low contrast (normal= \sim 10%).
 - For *Frequency*, use lower settings for less defined edges (normal= \sim 60).
 - Click the start point, then draw. Click where manual anchors/turns are needed.
 - To delete points, put the cursor over the last one, *Backspace/delete* previous.
 - To force a straight line, *Alt*+click, draw, *Alt*+click back to Magnetic.
- To select the **Quick Selection Tool** (*W*) (a magic wand in-a-brush)(4th icon down)

- Use the bracket keys ([= narrower ,] =wider) to specify width of the brush.
- Click hold, drag, and release over the area. Repeat. Dissimilar pixels are replaced.
- To remove from the selection area, repeat with *Alt* key held (brush with - on Options Bar).
- To add to the selection, hold *Shift*, then drag. (brush with + on Options Bar)
- To intersect with previous selection, hold *Shift+Alt*, then drag.
- Try the *Select Subject Alt*, then click on your subject.
- To refine the selection, try the *Select and Mask Alt*, then *Refine Edge Brush Tool (R)*(2nd down).
- Before using the **Magic Wand Tool** (best for broad areas of similar tone), check these settings:
 - Select the *Eye Dropper Tool (I)* low on Toolbar.
 - Eyedropper Options Bar, for *Sample Size*: (3 by 3, or 5 by 5 Average). (Point not recommended.)
 - To select the *Magic Wand Tool*, right-click the *Quick Selection Tool (W)* (4th down).
 - Best when working with broad areas of tone and color. If so, try *Contiguous* first, then *Color Range*.
 - Set *Tolerance* to limit the area of selection (how close colors match), (default=32, good for skies, 11 for small areas, 44 for large areas).
 - *Anti-Aliased*. *Sample All Layers*.
 - Click an average point in area(s) to fix. Halve or double the *Tolerance Value* to adjust (less is better).
 - Don't like the results, *Deselect (Ctrl+D)*, or *Reselect* back (*Shift+Ctrl+D*).
 - Select **Refine Edge** (*Alt+Ctrl+R*) on the Options Bar.
 - Select *View Mode*. (*X* to disable all views.)
 - Select the *On White (W)* or other preview selection choice. (*F* to cycle choices.)
 - *Radius*: higher px values are for fine tuning fuzzy edges. Try *Smart Radius*.
 - On the left side are the *Refine Edge* (soften) and *Erase Refinements Tools (E)*.
 - *Smooth*: higher values round off corners (like anti-aliasing).
 - *Feather*: higher values are like *Radius*, but apply uniformly along all of the edge.
 - *Contrast*: higher % values reduce unwanted speckling caused by *Radius*.
 - *Shift Edge*: amplifies or diminishes the values above.
 - *Decontaminate Colors* to eliminate color fringes.
 - *Output To* a layer or document at your choice. *OK*.
 - Convert the Background image to a normal layer by double-clicking its thumbnail.
 - In the *New Layer* box (Name opt.), select *OK*.
 - Click the *Add Layer Mask* (box with a white dot) on the Layers palette.
 - Click the area to copy. (You may change *Tolerance*, try doubling up values).
- To target a specific range of colors, use the Menu, click *Select>Color Range*.
 - Leave *Sampled Colors* selected. *Selection*.
 - *Localized Color Clusters* only if color range is subtle, as in blue sky.
 - Click the first *Eyedropper* (not + or -)(Eyedropper Tools determines Sample Size).
 - Adjust *Fuzziness* setting. Keep low, unless gradual transitions.
 - On the *Selection Preview* menu, select *Quick Mask* (unless viewing red/orange). *OK*.
 - Click a pixel color to start the range.
 - Click the 2nd *Eyedropper (+)* icon and click areas to add. Selected colors show white.
- **Making Advanced Selections:**
 - To adjust a range of tonal values (highlights/shadows) use the **Threshold Ctrl**
 - Create a Duplicate Layer of your Background.
 - Click & drag the thumbnail for the Background layer (right side) down to the *Create a New Layer* icon (□), next to the *Trash Can*. It goes highlighted.
 - Or, from the Menu, click *LayerDuplicate Layer* (“Background copy”).

- Set Opacity to about 50% (above Layers and right).
- From the Menu, click *Select>All (Ctrl+A)*.
- From the Menu, click *Image>Adjustments>Threshold*.
- Determine the tonal split by using the slider. *OK*.
- Set *Opacity* at 100%.
- Paint out areas not desired with white.
- Use the Magic Wand (*W, Shift+W*) without Contiguous to click the area.
- To make a selection based on color contrasts, use the **Channels Palette**.
 - From the Menu, click *Window>Channels*. Four layers appear the right.
 - Click on each of the three single channels to find the most contrast.
 - Duplicate Channel by dragging the channel layer to the *Create New Channel* icon.
 - Exaggerate the contrast with *Image>Adjustments>Levels*.
 - Slide the Black and White pointers close together under a steep gradient.
 - Fine tune with the gray *Mid-tone* slider for max contrast. *OK*.
 - Paint over any gaps.
 - *Ctrl*+click the channel to make it the white areas the selection.
 - You may reverse with the Menu, click *Select>Inverse*.
 - To see the selection over the image, click the RGB Channel Layer on the palette.
 - To extract a selection from a non-linear edge, such as hair or feathers:
 - Create a Duplicate Layer of your Background, either:
 - Click & drag the thumbnail for the Background layer (right side) down to the *Create a New Layer* icon, next to the *Trash Can*. It goes highlighted, or:
 - From the Menu, click *Layer>Duplicate Layer* (“Background copy”).
 - From the Menu, click *Filter>Extract*.
 - With the Highlighter Tool active, adjust the Brush Width (*[]*).
 - Highlight the edge of the selection, avoiding background unless covering up holes.
 - Make sure the line goes from frame edge-to-edge, unbroken.
 - Click the *Fill Tool* (upper left of box), and then click inside the selection.
 - This fill color represents the retained selection, and should not spill out.
 - If it spills out, *Ctrl+Z* to remove the fill, then Highlight the gap.
 - Use the Extract’s *Eraser Tool* to remove any unwanted highlights.
 - Click *OK*. All area outside the selection is removed from the Duplicate Layer.
 - To see the effect of the extraction, click the eye icon on the Layers Palette.
 - *Ctrl*+click on the thumbnail of the Layer.
 - If you turn off the Extract Layer, and turn on the underlying layer, you will see the selection overlaid on the image. Use the Lasso Tool for fixes.
- **Modifying Selections:**
 - To paint a modification, (double-)click on the **Quick Mask Mode (Q)**(clear circle in a box) on the bottom of the Tools Panel, or *Select>Edit in Quick Mask Mode*.
 - Choose which area to tint, probably the *Masked Areas* vs. the *Selected Areas*.
 - In the Color selection, pick a vivid color. Set Opacity to 50% or slightly less. *OK*.
 - Paint over the deselected area in black for elimination, or gray for a partial effect.
 - To smooth out the edges of a selection, *Select>Modify>Smooth*, & select radius.
 - Save any significant work as a PSD or TIFF, use *Select>Save Selection*.
 - Leave the current document name.
 - Leave *Channel* to *New*. (Saving creates an alpha channel.)
 - Type a new Name to describe the selection. *OK*. (Later, save the entire doc.)

- Later, you can come back, *Menu>Select>Load Selection*.
- Selections are not actually saved until the image is saved.
- To add contiguous colors, use *Select>Grow*, or non-contiguous colors, use *Similar*.
- To alter the shape of a selection, use *Select>Transform Selection*.
- **Targeted Adjustments using Masking:** (Remember: black blocks, white reveals.)
 - To create **composite images**, either:
 - Go to *File > New (Ctrl+N)*. Select a Document Type, such as Web or Paper. Set the Background Contents to *Transparent* (scroll down). *Create*.
 - Add and if not *Transparent*, resize background image
 - Drag an image from your computer into the document. Click and drag the handles around the edges to resize the image to fit the document.
 - Hold *Shift* while you resize to constrain the image to its original proportions.
 - Press *Enter* to finish placing the image — you won't be able to continue until you do.
 - Add more images. Drag more images into the document. Don't worry if they overlap — you can adjust that later. Each image becomes a separate layer, which you can view in the Layers panel to the right of the working area. If it's not visible, choose *Window>Layers (F7)*.
 - Move images in front or behind. Drag a layer up or down in the Layers panel to move an image in front of or behind another image.
 - Show and hide images. Click the eye icon to hide a layer. Click again to make the layer visible.
 - Refine your design. Now that you know some basics, you can fine-tune the placement of your images until the layout looks just right to you.
 - Select an image layer in the Layers panel, and then use the Move tool to reposition the image on the canvas. To resize an image, select the layer, and then press *Ctrl+T* to show the handles. Drag the handles to resize the image. Reposition each image to create a unique layout.
 - To create a mask using one image as a background and another as a subject:
 - For the background, go to *File>New*
 - Open both documents side by side.
 - Use the *Move Tool (V)* to drag the (flattened, if layered) subject all the way onto the background image. A layer is added on the Layers Palette.
 - To resize a layer, *Menu>Edit>Transform>Scale*, then *Shift+drag* a corner.
 - Define a selection. With the top image layer active, click the *Add Layer Mask* (clear circle in box), or go to the *Layer menu>Layer Mask*.
 - *Alt+click* on the *Layer Mask* thumbnail for a black & white preview.
 - With the Layer Mask active, *Menu>Blur>Gaussian Blur*:
 - For a crisp edge, select a value of 1 or 2 pixels. OK.
 - For a fuzzier edge, select a higher # of pixels. OK.
 - *Shift+click* the mask thumbnail turns the mask off/on.
 - To paint on a mask:
 - Make sure you do not have an active selection and the correct layer is active.
 - Click the *Add Layer Mask* button on the Layers palette.
 - Select the *Brush Tool (B)*, select a size ([]), and hard edge brush (*Shift + J*).
 - Press *D* to set the foreground/background colors to default black & white.
 - Paint black to block pixels, white to reveal (unhide) pixels.
 - Once a mask selection is made, go to *Layer menu>Layer Mask>Reveal Selection*, or click the *Add Layer Mask* icon (dot in box). Use the *Move Tool (V)* to drag in place.

- If you create an Adjustment Layer above the top layer, adjustments to it affect all layers below, so a Clipping Group is needed:
 - Click on the image layer on the Layers Palette you want to adjust. (> *Active*)
 - Create a New Adjustment Layer (right side, bottom)(**⬇**). Select type. *OK*.
 - On the Layers Palette, hold the *Alt* key while pointing at the dividing lines between the New Adjustment Layer and image layer below. (Repeat to exit group.)
 - When the cursor changes to a left arrow with overlapping circles, click.
 - Double-click the thumbnail for the adjustment layer.
 - Adjustments will be made only to the image layer in the clipping group.
- To **mask an adjustment layer**:
 - Create a selection area in the image.
 - Create a *New Adjustment Layer*. Select type. A layer mask is automatically created.
 - To smooth transitions, apply a *Gaussian Blur* from the *Filter* Menu.
 - Use an exaggerated adjustment to easily be seen.
 - (See paint on a mask, above.)
 - You can fill a layer mask with foreground color with *Alt+delete*.
 - You can fill a layer mask with background color with *Ctrl+delete*.
 - To partially block or reveal effects, use a shade of gray to paint.
 - Create an Adjustment Layer with a **Gradient Mask**.
 - Create a *New Adjustment Layer*, such as *Levels*.
 - After making the adjustment, click *OK* in the dialog box.
 - Select the Gradient Tool from the Tools Panel (*G*).
 - On the Options Bar, click the drop-down ▼ for *Gradient Editor*.
 - Choose a direction, such as *Foreground to Background*.
 - Choose a *Gradient Style*, such as *Linear*, from the 5 buttons.
 - Select other options, such as *Dither* and *Transparency*.
 - Press *D* to set the foreground to white, background to black (*X* reverses).
 - Make sure the Layer Mask Adjustment layer is active.
 - Click on the foreground limit and drag to the background limit. (Hold the *Shift* key to lock in to 45° increments.)
- **Liquify Tools**:
 - *Layer* menu>*Duplicate Layer* (or right-click layer).
 - To selectively scale an area, go to *Filter* menu>*Liquify* (*Shift+Ctrl+X*).
 - A new interface appears. Tools on the left are: *Forward Warp* (*W*), *Reconstruct* (*R*)(sort of a History go back), *Twist Clockwise* (*C*), *Pucker* (*S*), *Bloat* (*B*), *Push Left* (*O*), *Freeze Mask* (*F*), *Thaw Mask* (*D*), *Face* (*A*), *Hand* (*H*), and *Zoom* (*Z*) tools. Modifiers are available with the *Alt* key.
 - Avoid solid brushes, and use just the edges of the brush for edge warping.
 - Uncheck *Preview* periodically to see your progress.
- **Panoramas**:
 - *Shift*+click the sequence, right+click, *Open with...>Adobe Photoshop CC*. Camera Raw opens.
 - On the vertical *Filmstrip* on the left, click the ≡ menu, *Select All* (*A*).
 - On the vertical *Filmstrip* on the left, click the ≡ menu, *Merge to Panorama* (*Ctrl+M*).
 - Try *Spherical* or *Cylindrical* projections.
 - Check *Auto Crop* and use the *Boundary Warp* slider to reduce/eliminate empty space. *Merge.... Save*.

- **High Dynamic Range (HDR):**
 - *Shift*+click the sequence, right+click, *Open with...>Adobe Photoshop CC*. Camera Raw opens.
 - On the vertical *Filmstrip* on the left, click the ☰ menu, *Select All (A)*.
 - On the vertical *Filmstrip* on the left, click the ☰ menu, *Merge to HDR (Alt+M)*.
 - Unless no movements occurred, select a *Deghost* Options and check all boxes. *Merge.... Save*.

- **Plugins:**

- Most plugins, such as Nik Collection, are found in the *Filter* menu.

Finishing:

- **Saving:** (before sharpening)

- Select *File>Save As...* (*Shift+Ctrl+S*).
 - Adjust the filename to reflect it is the master of another file. Keep it with the others.
 - Primarily keep images in PSD format (flattening not required), or TIFF (flatten).
 - Save: *Alpha Channels*, *Layers*., *Color: ICC Profile: Adobe RGB (1998)*, or *ProPhoto* (16 bit).
 - If you want to convert ProPhoto RGB to another color space, 16 bit or 8 bit, do it before flattening the image. Avoid using ProPhoto RGB in 8 bit mode.
 - If TIFF: *None*, *Per Channel*, *RLE*. Use *Discard* only for transferring images to someone else, not you master.
 - Copy large images (> 400MB) as JPEG or TIFF (flatten first) for transferring.
 - 8 bit JPEGs are universal, but avoid multiple saves, use *Save As...*, and rename, or use another format, such as PDF, which also is universal & non-degrading.
 - Adjust JPEG compression/quality (max is 12) to a convenient file size (MB).
 - Use TIFF or JPEG for commercial printers. (EPS if it has type or vector data included.)
 - Use PNG(-24) for PowerPoint and Word documents (copy in doc app, then paste in Ps).
 - Back up your new files.

- **Image Resizing:**

- Click *Image>Image Resize*.
 - Leave *Constraint* (chain-link) on.
 - Enter the desired W or H in either box.
 - Resolution: 100-220 ppi for web/monitors (but n/a). 240 or 300 ppi for print (see Printer Setup).
 - Generally leave the three boxes checked.
 - Use *Bicubic Resample* (*Smoother* for enlargements, *Sharper* for reductions [and enlargements>200%]). (You set the default in *Preferences>General*.)

- **Sharpening:** (after resizing) (not applicable to completely low contrast images)

- Fill the screen (*Ctrl+0*).
- Select *Filter>Sharpen>Unsharp Mask*, (or *Smart Sharpen*) and then click on a spot to evaluate.
 - Set *Amount* (intensity) (~50% for small images, to 180%).
 - For high detail images, set *Radius* to about 0.4 to 1.0 pixels: low detail/large images to about 2.0 to 3.0 pixels: normal detail images to about 1.0 to 1.5 pixels.
 - A *Threshold* of 0 affects all pixels: high detail ~3 to 6, low detail/large images ~8 to 12.
 - Others: Portraits: 75/2/3, flowers: 150/1/10, landscapes 7 objects: 120/1/3.
- With *Preview* and 100%, click and hold on the preview to see the before image. *OK*.

- **Web Preparation:**

- Select *File>Save for Web & Devices* (*Alt+Shift+Ctrl+S*).
 - Select a *Preset* such as *JPEG High*.

- *Optimized*, *Convert to sRGB*, *Preview: Monitor Color*.
- Click the *Quality*: arrows box, then slide the triangle to the left and release, until the images appears worse, the Enter some (note the image file size in the lower left). *Save*.
- **Printing:**
 - Once the printer settings are as desired:
 - Save a pre-resized, pre-sharpened image.
 - Zoom in 1:1 and apply sharpening.
 - If using ProPhoto RGB color space, *Edit>Convert to Profile*, select *Adobe RGB* for ink-jets.
 - Don't send 16 bit to a printer that isn't 16 bit capable (8/16 bit: Epson 3880+, Canon iPF5000).
 - Select *Print*. Recheck proper Printer and Preset. Select either *Preview>Print*, or *Print*.

Installing Photoshop, Preferences and Problems:

- Create an Adobe ID and password at <https://www.adobe.com>.
- If you have plug-ins, keep them in a folder outside Photoshop's folder. (You may create aliases or short-cuts in the Photoshop folder.)
- First, uninstall the previous version. *Applications>Utilities>Adobe Installers>Uninstall Adobe Photoshop.app*. (Keep preferences.)
- Disable all spy ware and antivirus programs, plus stop backup or other running programs (use *Applications>Utilities>Activity Monitor*, *Ctrl+I*, select app, *Quit Process*).
- Download from the Adobe website, [CC Photography Plan Download](#).
- Use the default location.
- (You can install Adobe products on two computers.)
- Launch **Bridge**, select **Preferences** (*Ctrl+K*). Recommendations:
 - *General*:
 - *Behavior*, *When a Camera is Connected...* (Unless you have another photo library program, e.g. Lightroom), and *Double-Click Edits Camera Raw*.
 - *Ctrl+click Opens the Loupe...*
 - *Number of Recent Items to Display*, type about 25.
 - *Cache*:
 - *Automatically Export Caches...* (Keeps caches in same folder as image).
 - *Advanced*:
 - *Use Software Rendering* (unless frequent crashes).
 - *Generate Monitor Size Previews* if you are using a large screen monitor. *OK*.
- From within Bridge, select *Bridge>Camera Raw Preferences*. If you are in Camera Raw, click the Preferences icon (3 dots, 3 dashes by ⤴)(*Ctrl+K*) Recommendations:
 - *General*:
 - *Save image settings in: Sidecar ". " files*. (Stay in image's folder, not database.)
 - *Apply sharpening to:* (either, *All Images* works well, but sharpen more < printing).
 - *Default Image Settings*:
 - *Apply auto tone adjustments*.
 - *Apply auto grayscale mix when converting...*
 - *Make defaults specific to camera serial number and ISO setting*, particularly if photographers share (opt.). If you use presets, you might uncheck.
 - Later, open a typical image in Raw, adjust it, including noise reduction, use the pull-down menu at the top right of the *Basic* window, select *Save New Camera Raw Defaults*. Hold

Alt key to switch *Cancel* button to *Reset & Open Image* to *Open Copy*. Repeat for each camera.

- *Camera Raw Cache*:
 - *Maximum Size*: increase to ~5GB, if you have a large hard drive for a Scratch Disk. (Each GB equals over 200 previews.)(See *Ps Preferences>Performance*, below.)
 - Use the macOS *Disk Utility* to create a non-OS, ~5GB partition. (The OS partition needs at least 20GB of free space for Ps to work.) You might call it “*Scratch_Disk*.” Then click *Select Location...* and locate it. (Restart Ps.)
- *DNG File Handling*:
 - *Ignore sidecar XMP files* only if using other editors that do not use sidecars (uncheck for Lightroom users).
 - *Update embedded JPEG previews: Medium Size* (probably).
- *JPEG and TIFF Handling*:
 - Both *Automatically open JPEG/TIFF's with settings... OK*.
- Launch **Photoshop**, select *Photoshop (PC's Edit)>Preferences (Ctrl+K)*. Recommendations:
 - *General*:
 - *Color Picker* recommendations to *Adobe, HUD Color Picker (small): Hue Strip, Image Interpolation to Bicubic Automatic*.
 - *Auto-Update Open Documents*, *Export Clipboard*, *Use Shift Key for Tool Switch*, *Resize Image During Place*, *Animated Zoom*, *Zoom Resizes Windows*, *Zoom with Scroll Wheel*, and *Zoom Clicked Point to Center*, *Enable Flick Panning*, and definitely *Place or Drag Raster Images as Smart Objects*.
 - *History Log*, *Both, Choose...* the default location (*Library/Application Support/Adobe/Adobe Photoshop CC*), *Edit Log Items: Concise*, should be sufficient.
 - *Interface*:
 - Add *Show Channels in Color*.
 - *UI Font Size* to *Large* if a high-res monitor.
 - *File Handling*:
 - *Image Previews: Always Save* (*Icon*, *Windows Thumbnail*), *Append File Extension: Always*, *Save As to Original Folder*.
 - *Prefer Adobe Camera Raw for...Files* (*Bridge & Raw preferences, too.*), *Ignore EXIF Profile Tags*, *Ask Before Saving Layered TIFF Files (Big!)*, *Maximize PSD and PSB* (as in BIG prints) *File Compatibility: Always*, especially if you use Lightroom's *Edit in Photoshop*. (But it does increase file size.) *Never*, if you use only Ps, but not Lr. Otherwise *Ask* if your practices vary.
 - *Recent File List Contains: ~10 files*.
 - *Performance*:
 - *Memory Usage*: default is ≈70% for a 64 bit Mac or Windows and loves 8 or more GBs of total RAM. Set to maximum recommended.
 - *History & Cache: Default/Photos* (Read *Description* in dialog.)
 - *History States* to ≈50 (more for heavy editors).
 - *Cache Levels* to 4, if your video card isn't overworked and images are small, to 6 if you have a struggling integrated memory chip or images are large, or many layers. (High levels reduce screen redraw accuracy.)
 - *Cache Tile Size: 1024K*. If an Intel Core/AMD, then *1028K*.
 - For *Scratch Disks*, select a fast additional internal hard drive(s) (if not, make a non-OS partition.) *OK*.

- Select the HD, press $\mathbb{H}+I$, or right click>*Get Info*, click the lock icon on the bottom, type your password, *Ignore ownership on this volume*, click the lock.
- If *Enable OpenGL Drawing* if not grayed-out, (if you have OpenGL 3.3+, \geq 2014 Mac).
 - If you have an older graphics card, or an advanced one, select *Advanced Settings...*
 - *Cursors*: *Full Size Brush Tip*, *Show Crosshair in Brush Tip*. Other Cursors: *Precise*.
 - *Units & Rulers*: (Displays have ppi, printers have dpi.)
 - *Units: Rulers: Percent, Type: Points*.
 - *New Document Preset Resolutions, Print Resolution*, should be a ($\frac{1}{3}$) fraction of your printer's resolution, and between 180-360 pixels/inch. Go with 300 ppi, except Epson printers try 240 or 360 ppi (sometimes referred to as dpi mistakenly).
 - *Screen Resolution* should be your monitor's pixels/inch. \approx 100-220 ppi. (not important).
 - Measure the width or height, divide it by the max pixel dimension in *Settings>Display*.
 - *Point/Pica Size*: *PostScript (72 points/inch)*.
 - *Plug-Ins*: If you install additional plug-ins, and click *Choose...* create a folder outside Ps, such as [HD]/Library/Application Support/Adobe/Plug-Ins.
- Select *Edit>Color Settings...* (*Shift+Ctrl+K*), change *Settings* to *North American Prepress 2*.
 - Under *Working Spaces>RGB*: if you primarily create for the web, a photo lab, or use an inkjet with only 2-4 inks (CMYK), select *sRGB*. If you use 6+ inks, or convert to CMYK, select *Adobe RGB (1998)*. When in doubt, go *Adobe RGB (1998)*(wider color gamut). *ProPhoto RGB* offers more, and works well with Lightroom (but needs more resources).
 - *Gray: Gray Gamma 2.2* (unless using *ProPhoto RGB*, which uses 1.8)
 - Under *Color Management Policies>RGB*: select *Convert to Working RGB* (or *Ask*).
 - (You may want to turn off the 3 *Ask* boxes, once you have some experience.)
 - Select *More Options*.
 - *Conversion Options>Engine: Adobe (ACE)*.
 - *Intent: Relative Colorimetric* (but debatable).
 - Check all three boxes.
 - Select *Save*, and type a custom name, such as yours, and "Color Settings." *Save. OK*.
- **Printing setup:** (Epson printer example)
 - First, go *System Preferences* on the Dock>*Hardware>Print & Fax*, click on the photo printer, then *Options & Supplies, Driver* tab, use the *Print Using:* pulldown menu, click *Select a driver to use...* to find your manufacturer's driver for this model. *OK*, and close windows.
 - First time setup for a **photo printer** create a photo profile:
 - Open a text editor (e.g. *TextEdit*).
 - Open any document, or create a new document.
 - Click *File>Page Setup*. Select the printer, paper size, orientation, *Save*.
 - Click *File>Print*.
 - Select the photo printer.
 - Click the pulldown arrows by *TextEdit* (or other editor).
 - Check and adjust the settings, particularly color, resolution, or media.
 - Select *ColorSync*, and a *Profile* for you photo printer, or *Automatic*.
 - In *Paper Handling*, *Scale to fit paper*, and re-check *Destination Paper Size*.
 - In *Quality & Media*, confirm paper, tray and quality.
 - Click the *Presets* box, *Save current settings as a preset*, type name for this (photo) printer and setup. *OK. Cancel* (this time only). Close editor.
 - **First time print setup:** Launch Photoshop, open a (Test Card) image.

- *File>Print (Ctrl+P).*
- *Printer:* Select the desired photo printer.
- Select the orientation icon (portrait or landscape). (skip down)
- *Color Handling: Photoshop Manages Colors* (but try *Managed by Printer*).
- *Printer Profile:* [your photo print profile, e.g. *SP1400 PPPG*].
- *Rendering Intent:* is *Relative Colorimetric*, if using an ICC profile.
- *Black Point Compensation*, if using an ICC profile (unless your prints are too dark).
- Select *Print Settings...* (back up)
 - Select the desired photo printer again, ▼ for more options, and Paper Size.
 - Open the *Layout* box, select *Color Matching*, both dots should be grayed out (Ps manages)..
 - (Printer) *Profile:* provided by the manufacturer with abbreviations for the model and paper. (Epson Stylus Photo 1400 on premium photo paper-glossy would be “SP1400 PPPG”) (Or, try <http://gutenprint.sourceforge.net/index.php>) (e.g. [User]>Library>ColorSync>Profiles>[...].icc)
 - Select *Paper Handling*, select the *Destination Paper Size*.
 - Select *Print Settings, Media Type:* select your paper.
 - *Mode:* *Advanced. Print Quality: Photo* unless your printer exceeds 1440 dpi and the image has high pixel dimensions, then *PhotoRPM. (High Speed is OK.)*
 - *Click the Presets* box, *Save current settings as a preset*, type name for this (photo) printer and setup. *OK.*
 - Back to the Ps *Print* dialog, under *Scaled Print Size*, *Scale to Fit Media*, and check the *Print Resolution:* is between 180 and 360 ppi (240 & 300 ppi most common).
- Click *Print* (This doesn't really mean print now, only a common dialog box.)
- *Cancel* after this one-time setup.

Notes

- Use a monitor calibrator to insure your monitor's colors are consistent with changing light & age.
 - I use an X-Rite ColorMunki Photo (now i1Studio) which covers the display, printer, and a projector.
- Photoshop's layers need a lot of RAM, otherwise it uses hard drives as scratch disks, so an SSD helps.
- Do not copy and paste images into Ps; either drag and drop, or use *File>Place*. (Saves memory)
- Problems – visit the www.adobe.com/support/photoshop/ website.
- If preference settings seem to cause big problems, save your custom Presets and Actions. Jot down important Preferences, the restart Photoshop with the *Shift+Alt+Ctrl* keys held down until it asks if you want to delete the preferences. The defaults are restored; you do the rest.
- If you want to install Photoshop on a different computer, first go to *Help>Deactivate*.
- Adobe allows a trial, and installs on two computers (not on a network). CC does not require a product key, only an Adobe ID. It periodically calls home to verify.

Useful Keyboard Shortcuts for Photoshop (Ps) for Windows

By Jim Lamb at JamesLambPhoto@icloud.com

General Keyboard Commands: Help: **Ctrl+/?**

Accept: **Enter** ... Cancel: **Esc** or **Ctrl+.**

Copy: **Ctrl+C** or **F3** in Ps

Cut: **Ctrl+X** or **F2** in Ps

Open: **Ctrl+O** or swap between Ps ... Bridge: **Ctrl+Alt+O**

Paste: **Ctrl+V** or **F4** in Ps

Print: **Ctrl+P** ... Print One: **Shift+Alt+Ctrl+O**

Save: **Ctrl+S** ... As: **Shift+Ctrl+S** ... as Copy: **Alt+Ctrl+S**

Select All: **Ctrl+A** ... Deselect All: **Ctrl+D**

Undo: **Ctrl+Z** ... Redo: **Shift+Ctrl+Z**

Photoshop Keyboard Commands: **Window>Workspace>** (**Shift+Alt+Ctrl+K**)

Actions palette: **Alt+F9**

Brush: **B** (Palette: **F5**) ... Brush size-decrease: [**]** ... Brush size-increase: **]**

Brush-hardness: increase: **Shift+]** ... decrease: **Shift+[**

Clone stamp tool: **S**

Color balance-adjust: **Ctrl+B** ... Color palette: **F6**

Crop tool: **C**

Curves-adjust: **Ctrl+M**

Deselect: **Ctrl+D** ... Reselect: **Shift+Ctrl+D**

Eraser Tool: **E**

Feather: **Shift+F6**

Fill with foreground/background color: **Alt/Ctrl+Backspace** (Delete)

Filter-last (reapply): **Ctrl+F**

Free transform: **Ctrl+T**

Hand Tool: **H** (hold to get temporary use) or **Spacebar**

Hide all panels: **Tab** ... Hide all but Toolbox & Alts Bar: **Shift+Tab**

Hide extras: **Ctrl+H** (legacy assignment) ... Hide Target Path: **Shift+Ctrl+H**

Hue/saturation-adjust: **Ctrl+U**

Information palette: **F8**

Inverse Selection: **Ctrl+Shift+I** or **Shift+F7** ... Invert Image: **Ctrl+I**

Layer-New: **Shift+Ctrl+N** (+**Alt** for no dialog) ... Layers palette: **F7**

Layer-via copy: **Ctrl+J** ... Layer via Cut: **Shift+Ctrl+J**

Layers-merge selected/down: **Ctrl+E** ... Visible: **Shift+Ctrl+E**

Layers-select all except background: **Alt+Ctrl+A**

Levels-adjust: **Ctrl+L**

Move tool: **V** (hold Shift before drag release to match images)

Quick Mask: **Q** ... Mask Panel: **F4**

Quick Selection: **W** ... To cycle tools incl. Magic Wand **Shift+W**

Refine edges: **Alt+Ctrl+R**

Rulers-show/hide: **Ctrl+R**

Select a square (not rectangle) or circle or add to: **Shift+drag**

Select center point for selection or subtract from: **(Shift+)Alt+drag**

Switch foreground/background colors: **X** ... Default fore/back colors: **D**

Toggle Last State: **Alt+Ctrl+Z** or **F1**

View-Fit on screen: **Ctrl+0** (Zero) ... 100%: **Ctrl+1** ... Full/Std Screen: **F**

Zoom in: **Ctrl+=** (by Backspace) Zoom out: **Ctrl+-** (left of = key)

Zoom tool (magnifier): **Z** (As of August 28, 2019 at 10:12 PM)