Sharpening for Output

Introduction to Photoshop

Lecture outline

- Sharpening images
  - All images need sharpening
    - Line pair per mm (lp/mm)
- Three type of sharpening
  - Capture sharpening
  - Selective sharpening
  - Output sharpening
  - Sharpening workflow
- Sharpening for web/email
- Sharpening for print
- Unsharp Mask
- Smart Sharpen
- HDR Toning
- High Pass Sharpening

Sharpening Images

- All images from a digital camera need sharpening
  - Resolution is in line pair / mm (lp/mm)
    - 1 line pair is a white line and a black line
    - 1 mm = approx. thickness of a dime
  - Very high resolution B&W film: 150 lp/mm
  - Resolution of some lenses: 100 lp/mm
  - Resolution of film paper: 75 lp/mm
  - Resolution of camera > paper = sharp images (if image is in focus)

Sharpening Images

- Moderately inexpensive photo inkjet printers (ex: Epson 3880) have a resolution greater than that of most lenses

- Result: images, even if in focus, will be a little soft

- Ink on paper tends to bleed (spread)

  - Amount of spread depends upon paper type (glossy, matte, watercolor, rice, canvas)

  - Blurriness of image on paper is dependent upon how much the ink spreads (glossy = least blurry, watercolor or rice = most blurry)

Sharpening Images

- To the human eye, a high contrast along a sharp edge equates to an object being in focus, even if it is slightly out of focus

- Increase of contrast along edges = apparent increase in sharpness of image

Three types of sharpening

- Capture sharpening
  - If you photograph in JPEG mode, camera will do this to the image automatically
  - If you photograph in RAW mode, you can do capture sharpening in Adobe Camera Raw (module of Photoshop) or in Lightroom
  - You do not have to do capture sharpening with RAW images
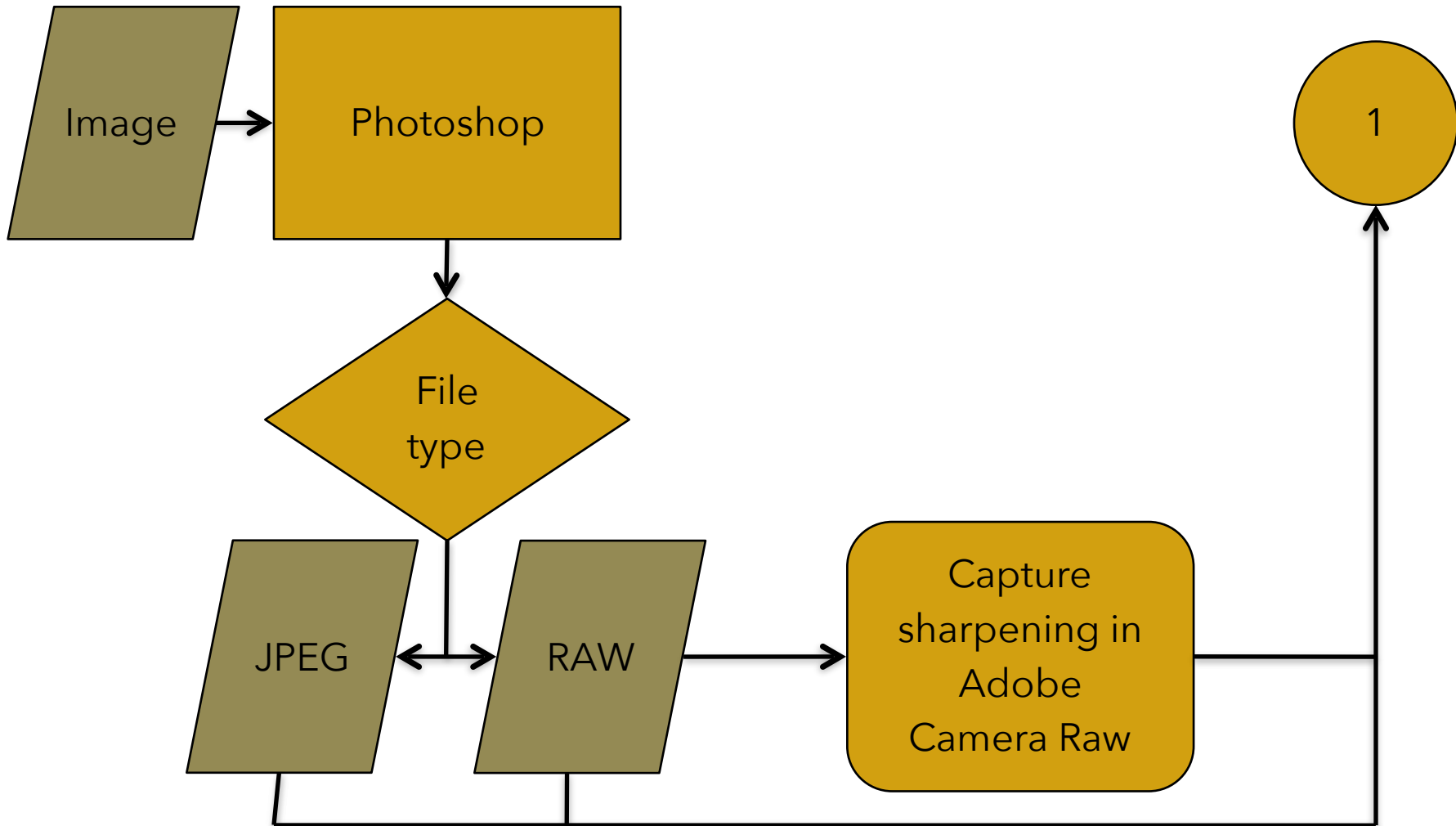
Three types of sharpening

- Selective sharpening
  - Typically done using one of the sharpening filters such as unsharp mask, smart sharpen, or surface sharpen on a layer with a layer mask
  - Mask out things that don't need to be sharp
  - What needs to be sharp?
    - Anything with texture or detail
      - People & animals: eyes, hair, hands, fur, jewelry, clothing (maybe)
      - Landscapes: leaves, grass, sharp rock formations (Grand Canyon), rough tree bark
      - Buildings: bricks, sharp lines (windows, walls), features

Three types of sharpening

- Output sharpening
  - Usually unsharp mask or smart sharpen
  - Run it on its own layer
    - Do the [Shift + Option/Alt + Cmnd/Ctrl + e] sequence to stamp visible the image into its own layer
    - Run sharpening on this layer
    - Amount of sharpening depends on destination
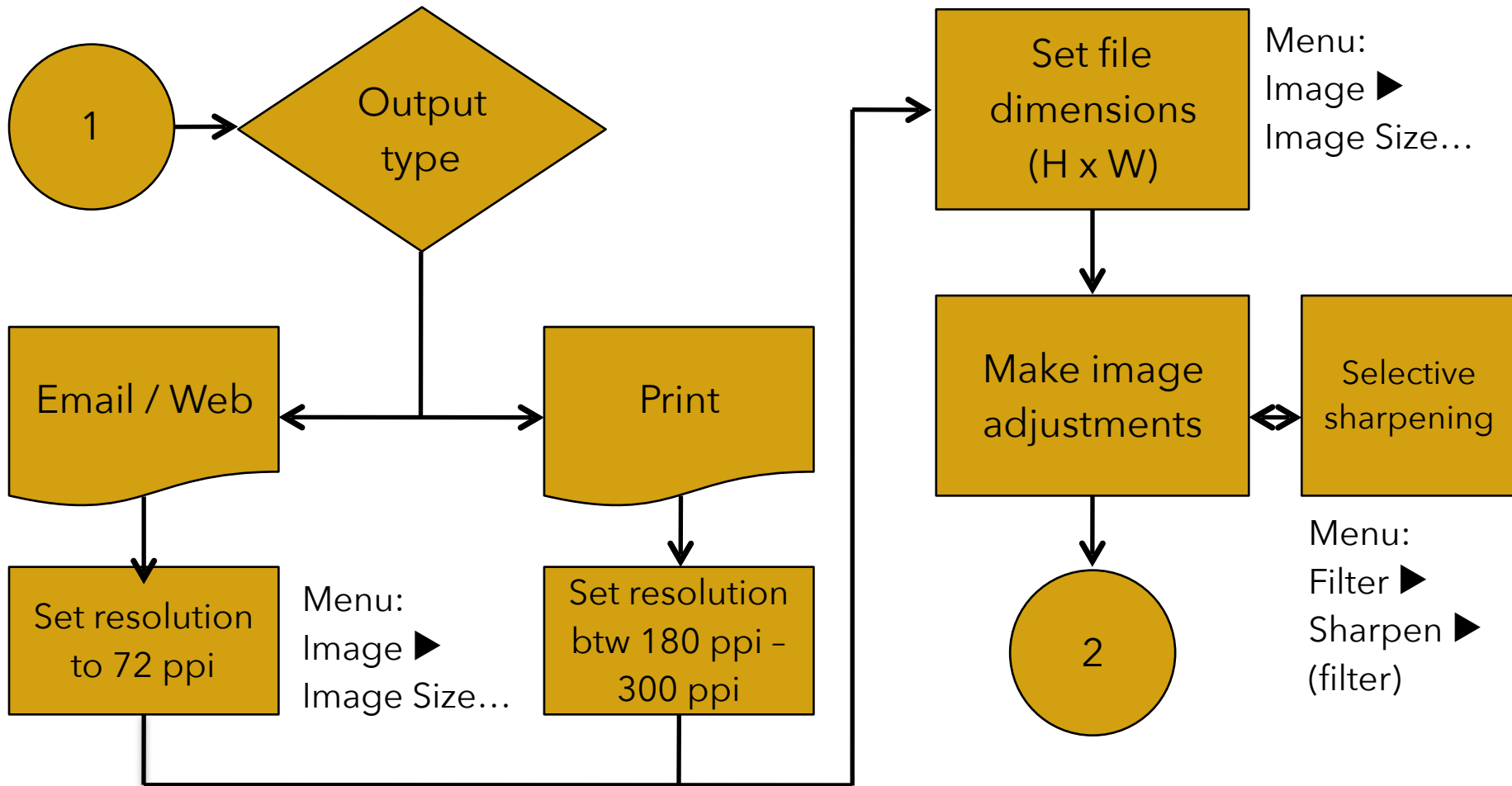   - Sharpen more for print than for web / email

Three types of sharpening
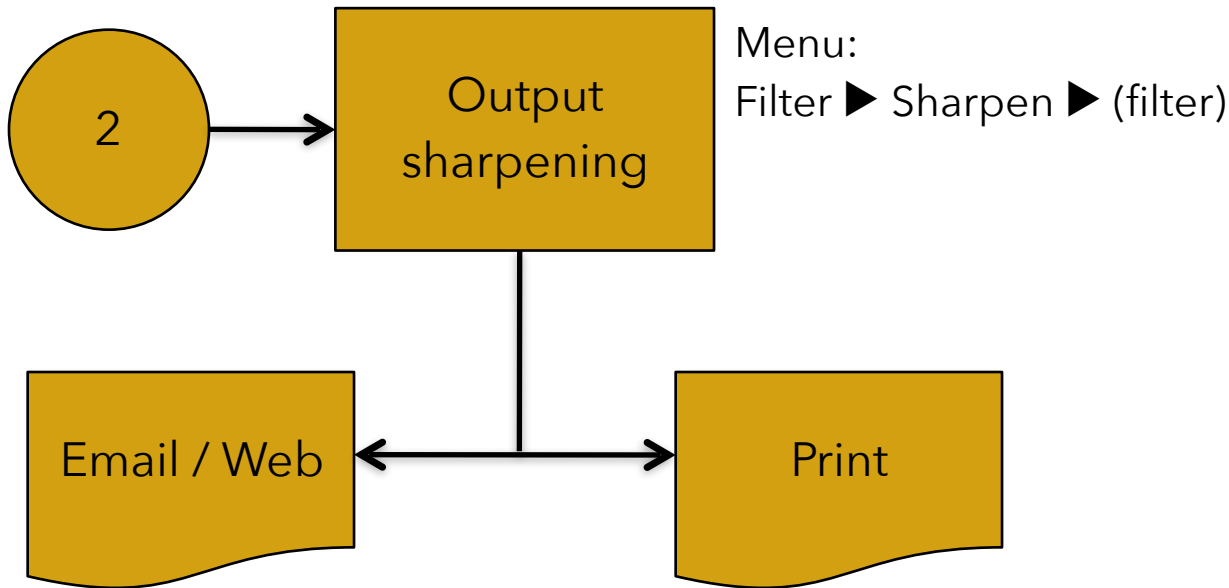
- Sharpening workflow: capture sharpening

Three types of sharpening

- Sharpening workflow: selective sharpening

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    1  →  Output type
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Output type branches to:

Email / Web → Set resolution to 72 ppi
Menu: Image ▶ Image Size…

Print → Set resolution btw 180 ppi – 300 ppi

→ Set file dimensions (H x W)
Menu: Image ▶ Image Size…

↓

Make image adjustments ⟷ Selective sharpening
Menu: Filter ▶ Sharpen ▶ (filter)

↓

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Three types of sharpening

- Sharpening workflow: output sharpening

Menu:
Filter ▶ Sharpen ▶ (filter)

Sharpening for web/email

- The sharpening rule: ALWAYS sharpen images while viewing them at 100%!

- Changing the resolution of an image (going smaller) will make the image appear sharper

  – Smaller things look sharper

- Images destined for web or email will need less sharpening than images destined for print

  – Screens have less resolution than paper

    - Exception: Retina-type screens

Sharpening for print

- The sharpening rule: ALWAYS sharpen images while viewing them at 50% or 100%

- Sharpen until it looks bad on the screen—it'll probably print out OK

- Different paper types will spread the ink out differently
  - Make and keep sample prints on different papers

- Make a print

- Commercial printers (Mpix, Bay Labs, WHCC)
 - Get sample pack of paper types

Unsharp Mask
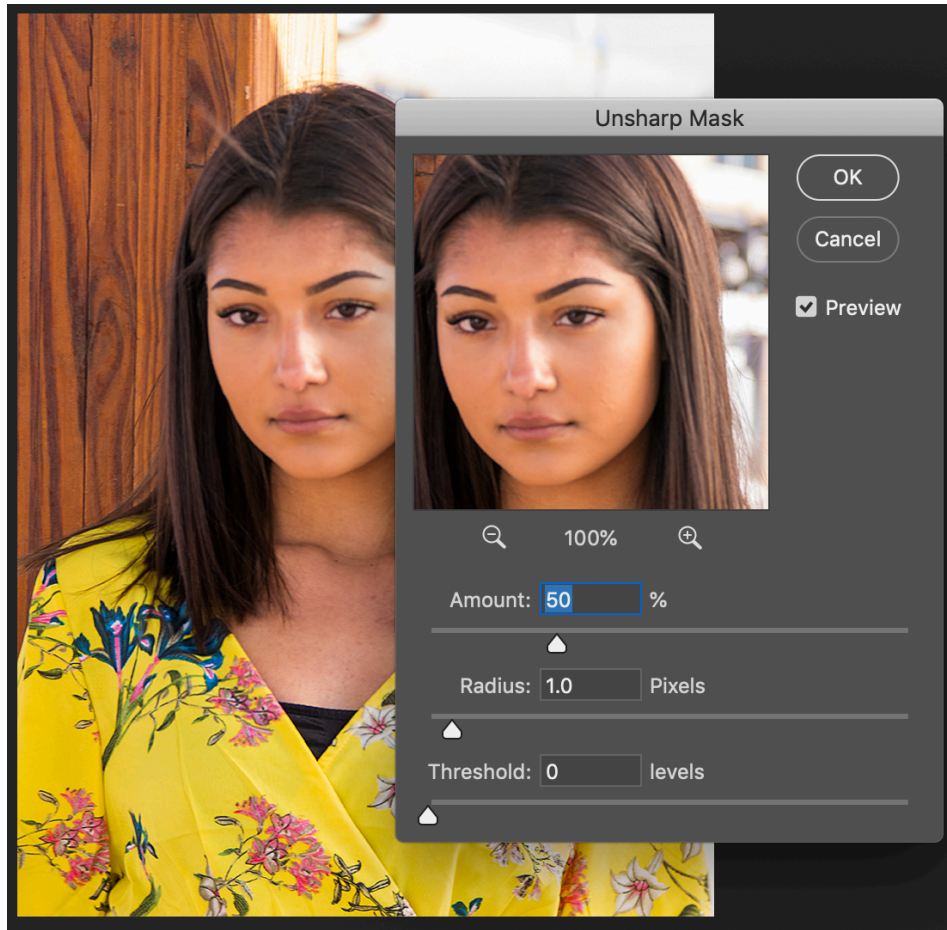
- Amount: how strong the sharpening effect
- Radius: determines the number of pixels surrounding the edge pixels to be sharpened
- Threshold: difference in tonal value between pixels (lower = more tonal difference)

- High resolution settings (print)
  - Amount: 150 – 200%
  - Radius: 1 – 2
  - Threshold: 2 – 20

Smart Sharpen

- Amount: how strong the sharpening effect

- Radius: determines the number of pixels surrounding the edge pixels to be sharpened

- Remove:
  - Gaussian blur (Unsharp Mask)
  - Lens blur
  - Motion blur

- Shadows and Highlights: typically no adjustments needed, if these are not shown, don't worry about them; if shown, just hide them.
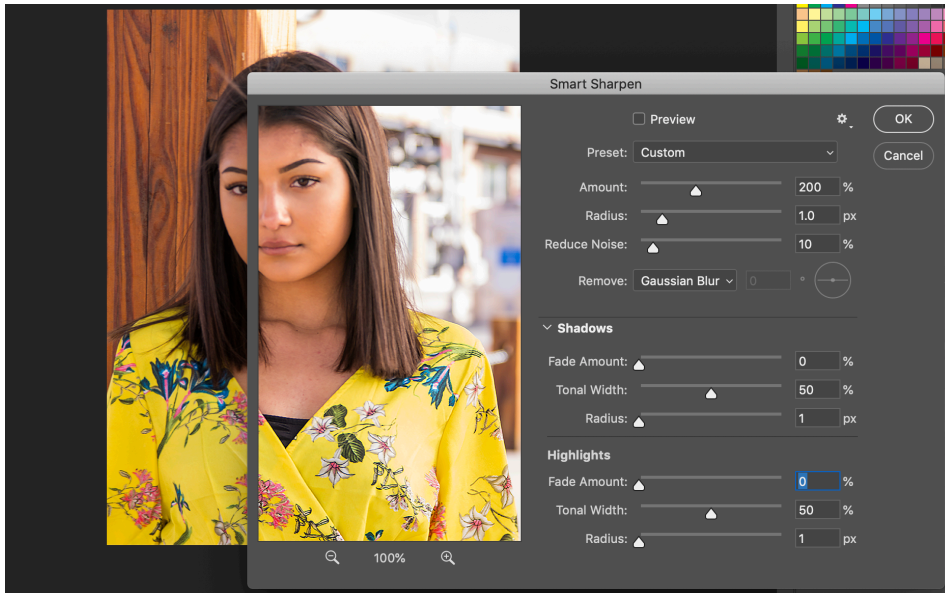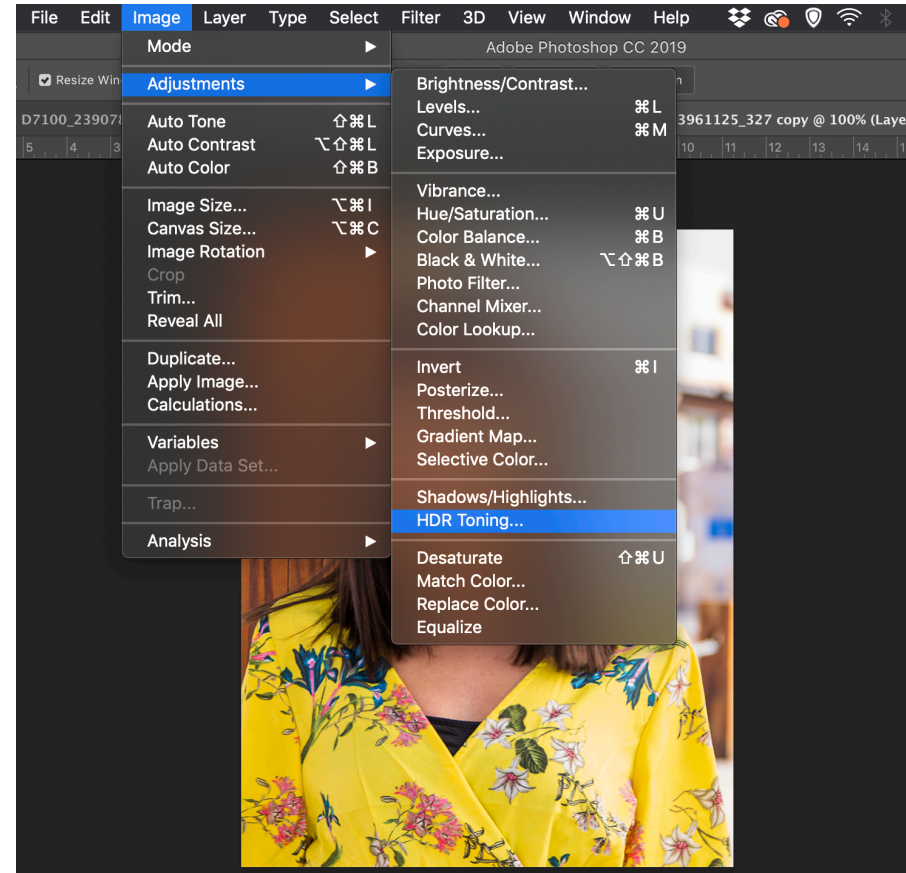
HDR Toning

- HDR Toning is an alternative way of sharpening an image. The drawback to this method is that you can quickly over sharpen if you're not careful.

- First, take the image that is ready to be sharpened and under the Image menu item select Duplicate. Check the box to duplicate merged layers, then OK to make a flattened copy in a new tab window.
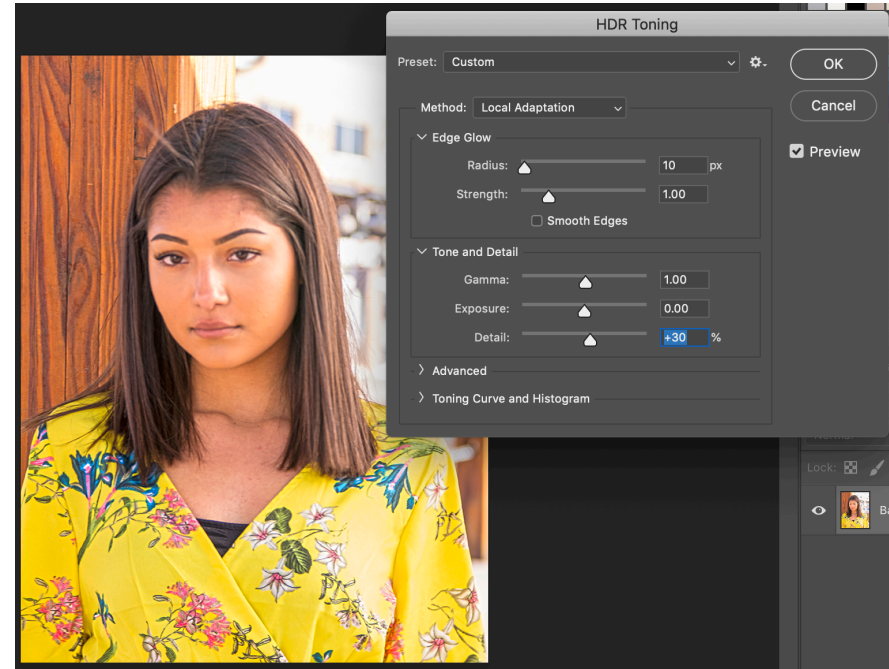
HDR Toning

- Once you have the duplicate image, from the menu do Image -> Adjustments -> HDR toning (yes, this is a destructive edit, but your doing it on a copy of the original)

- You will be asked to flatten the image, click OK

HDR Toning

- The two of the three sliders you will be concerned about are under Edge Glow, the Radius and Strength sliders. Set these to 10px and 1.00 respectively.

- The last slider is the Detail slider under Tone and Detail. Move the Detail slider until the image is sharp but not too sharp (i.e., seeing unwanted details); depending upon the image, keep the Detail slider between 0 and +50.

- Click OK

# HDR Toning

- Original image

- Image sharpened via HDR Toning

High Pass Sharpening

- I took a Santa Fe Workshop class last year on Fine Art Printing taught by Mac Holbert, who has done printing for 27+ years. This is his method of doing final output sharpening which works for both print and visual display.
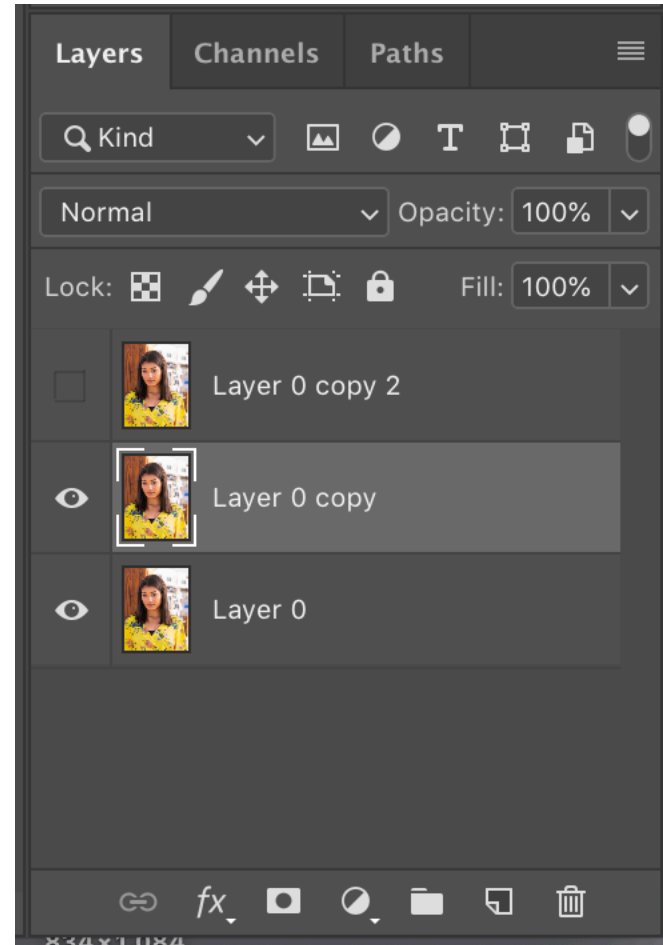
High Pass Sharpening

- In this method you start with your completed (except for sharpening) image. Create a new layer of all visual elements (the Claw, shift-alt/option-command/control-e).
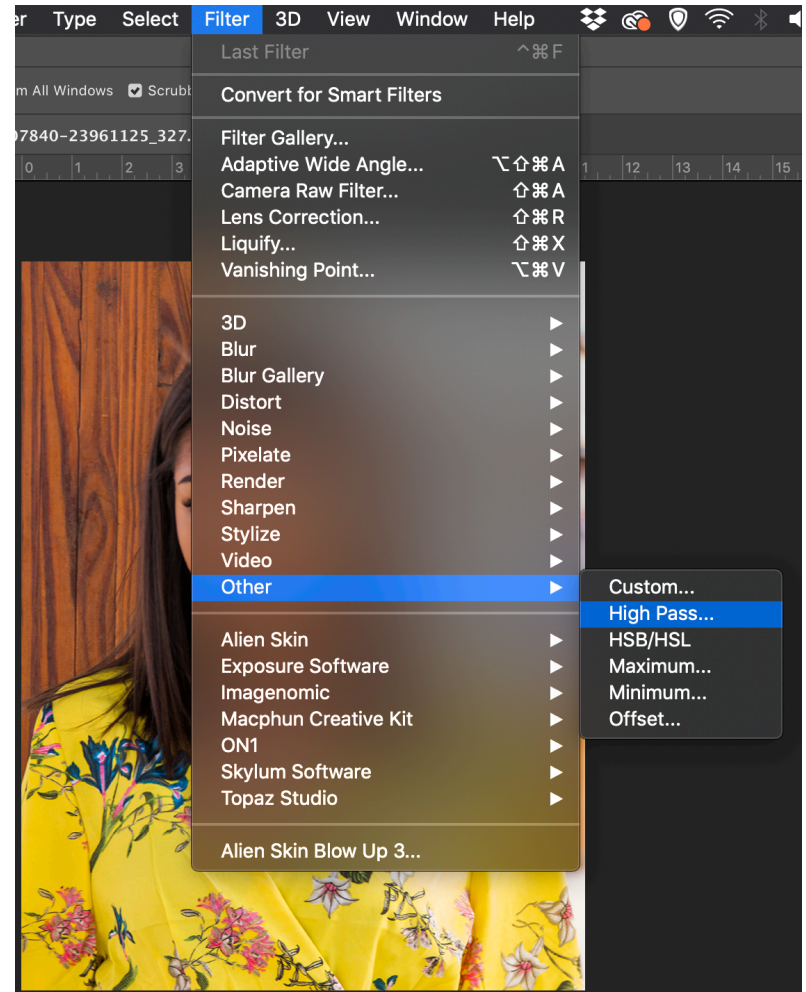
- Duplicate this layer twice.
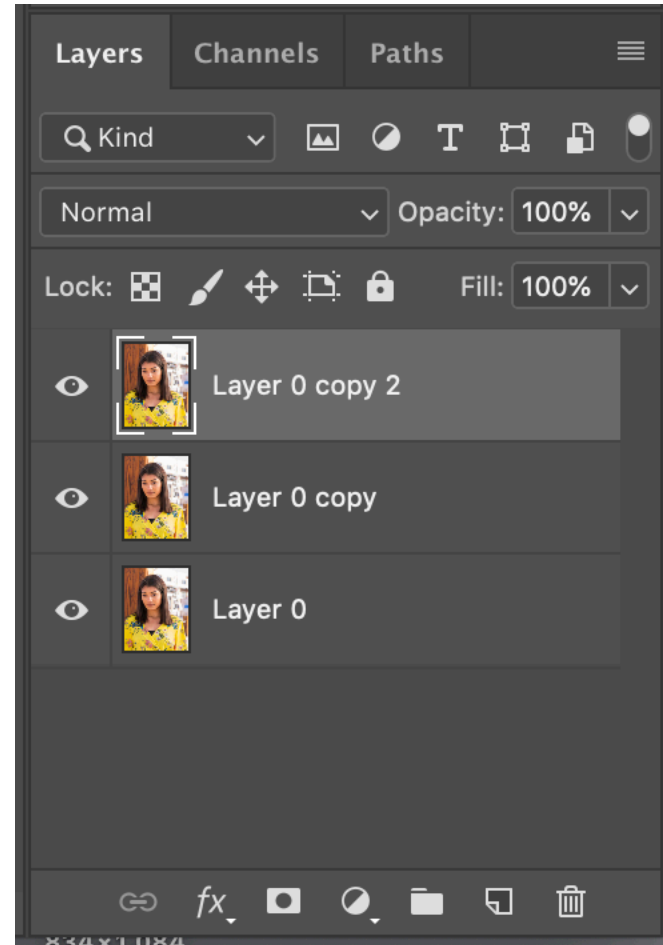
High Pass Sharpening

- Hide the top most layer and make the second layer the active one.

High Pass Sharpening

- From the menu do Filter -> Other -> High Pass…

High Pass Sharpening

- Set the value of the radius to 50. This will blur out all the coarse detail and sharpen only the very fine detail. This is called micro-contrast adjustment. You notice that the image has a lot of color information that we will deal with next slide.
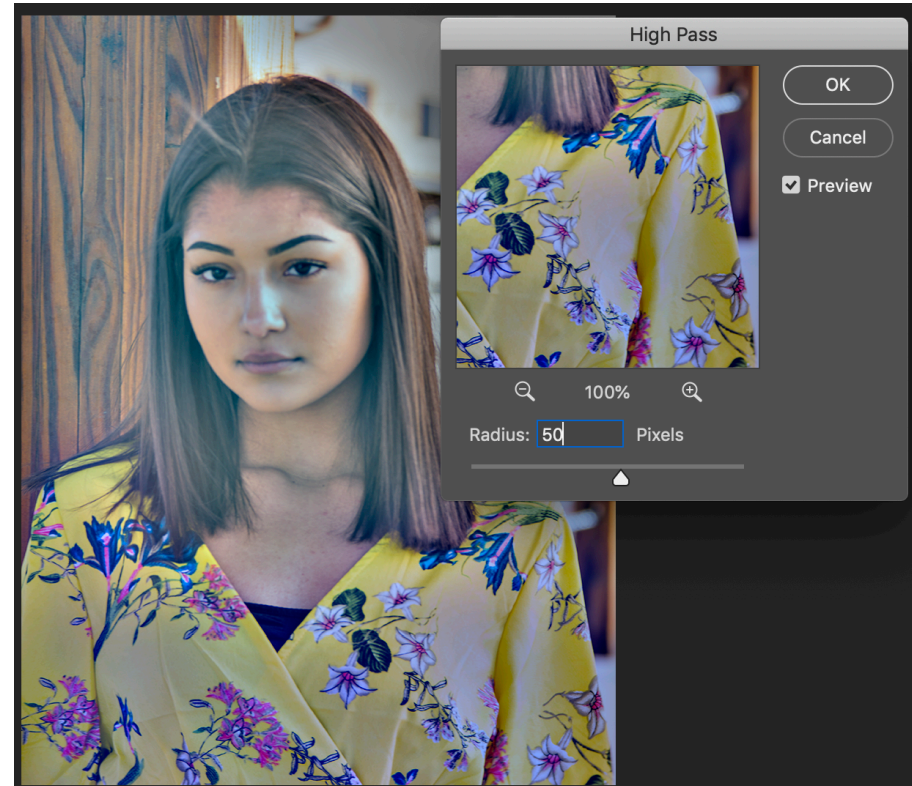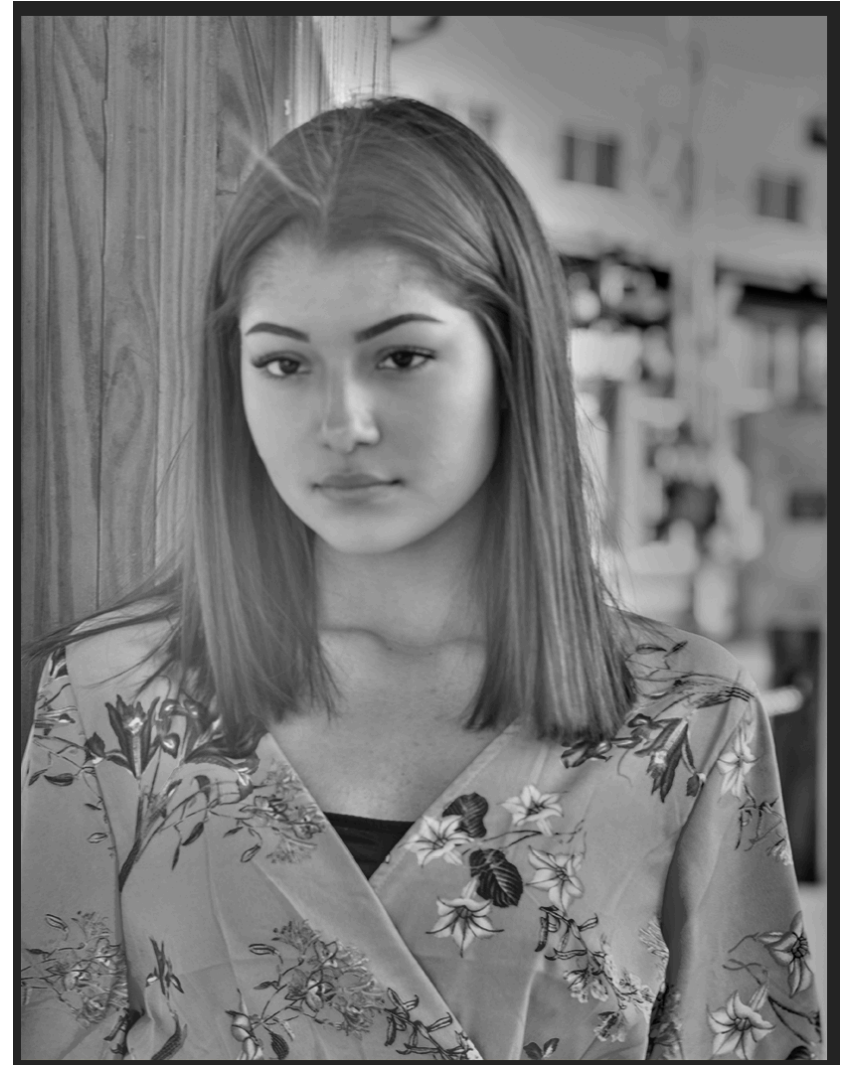
High Pass Sharpening

- To remove the color you will go to the menu Image -> Adjustments -> Desaturate (destructive here is OK)

- Keyboard: shift-command/control-u
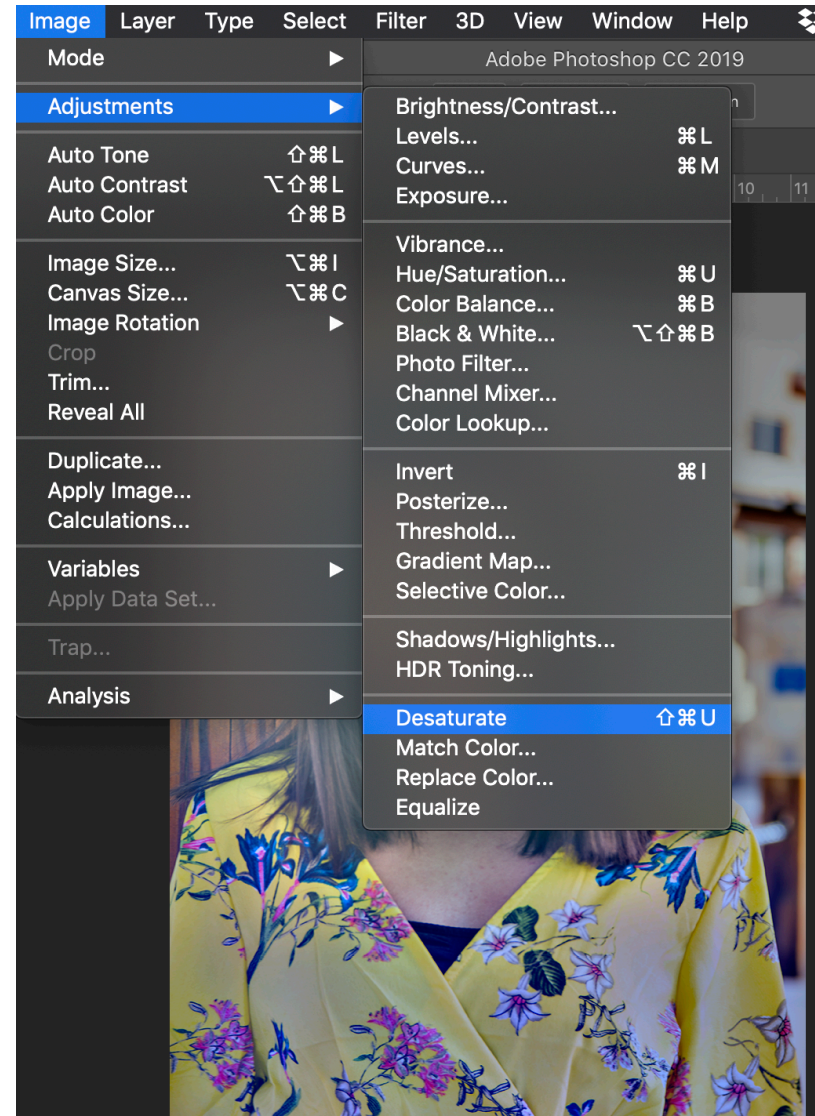
High Pass Sharpening

- You now have an image that has a lot of neutral gray with fine detail.

High Pass Sharpening

- Change layer blend mode to Soft Light with an Opacity of 50%.

- Make the top layer active and repeat the steps except this time in the High Pass box change the value from 50 to a point where you can just see the large detail. This value is image dependent; on this image the value was 2. Run the filter and change its blend mode and opacity to Soft Light at 50%.
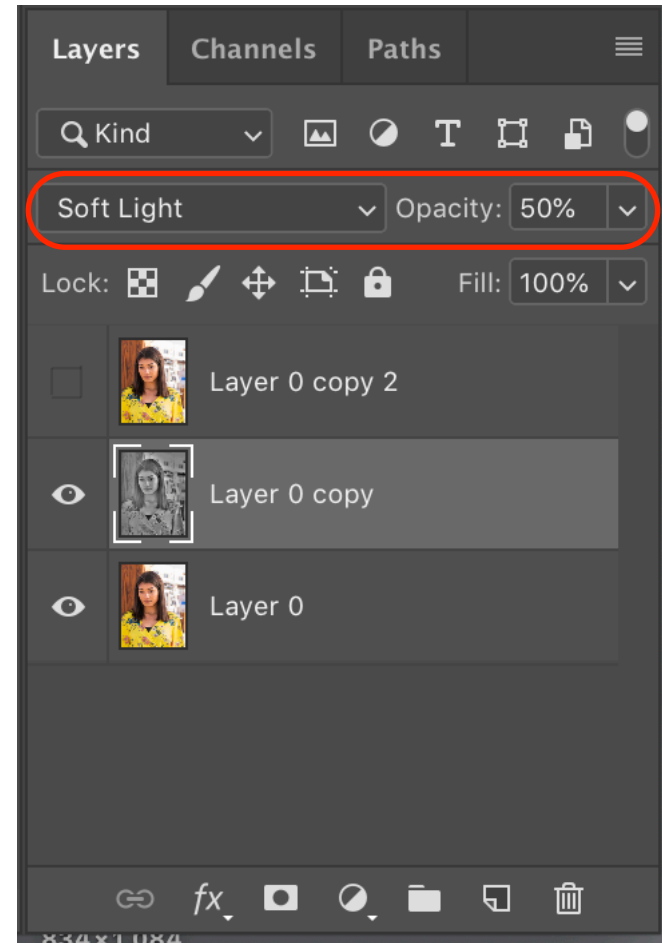
High Pass Sharpening

- The benefit of this method is that you have some options in adjustments in that you can vary the opacity of the two layers, and you can change layer blend modes between Overlay and Soft Light, so you up to 800 options:

  - Soft Light x 100 + Soft Light x 100

  - Soft Light x 100 + Overlay x 100

  - Overlay x 100 + Soft Light x 100

  - Overlay x 100 + Overlay x 100

High Pass Sharpening

- Original image

- Image sharpened via High Pass

Alternate Sharpening Results

- Original image

- HDR Toning

- High Pass