Before & After: Digital Processing Ideas

- There is a wide range of different post-processing techniques that can be used to change the way your photographs look. Whether you are a beginner or an advanced user, when it comes to digitally enhancing images, there is something that anyone at any level can play around with. The cost of software doesn't have to be a barrier, as there is a wide variety of free, subscription, and cash-up-front software packages out there.

Before You Start

- Make sure you are editing a copy of the photo!
  - This allows you to play around, to experiment, and to make mistakes, and be able to start again with a fresh copy.
  - Once you overwrite the original, you can never get back to the start of an editing process!
- If you don't have licenses for fancy software, go to Google to see if there are free or trial alternatives.
  - Check reviews or online communities to see what other photographers recommend. This will help you to find software that is easy to use, and will help steer you away from malware and viruses. Websites like Flickr and 500px are good places to start looking.
  - If software looks dodgy, don't install it!
- Once you are done editing, don't forget to back up your work as well as your originals!

Beginner Techniques

- Turn a colour image into a black and white one.
- Reframe an image.
- Rotation/angle adjustment.
- Sharpen/blur your image.
- Alter the brightness or contrast of the image.
- Adjust colour saturation.

Converting an Image to Black and White

- Before converting an image to black and white, it is important to consider the tonal contrast in the image.
  - Colour contrast is not the same as tonal contrast!
    - Colour contrast means that there is a striking difference between two or more colours.
    - Tonal contrast means that there is a striking difference between light and dark areas.
  - Two colours might have a lot of contrast, but when they are desaturated they will look identical if they have the same tonal contrast.

- There are a few different methods that can convert an image to black and white.
  - Use photo editing software's Grayscale function
  - Use the photo editing software's Desaturate function
  - Decompose the image to any channel format, and use any one channel.
    - Red-Green-Blue (RGB) channels, and use any channel.
    - Hue-Saturation-Value (HSV) and use the Value channel.
    - Lightness-A-B (LAB) and use the Lightness Channel.
  - Use the Channel Mixer filter.
- Not all of these methods will work for every image!

Reframing an Image

- Reframing an image can be used to change the focus of the image, or to remove distracting elements that are poking into the frame.
- Sometimes it is necessary to reframe an image to meet format requirements.
  - For example, when an image needs to be in a 16x20 format for a competition, it can become necessary to trim a portion from the ends of a photograph, as camera sensors don't necessarily have a 4:5 aspect ratio.
- To do this, you first need to select the portion of the image that you wish to keep.
  - Note that with most crop selection tools, it is possible to tell the tool to stick to a specific aspect ratio, if desired.
- Next, use the Crop to Selection tool.
  - This allows you to keep all of the image metadata intact.
  - You can create a new image from the selection, but this can cause all of the metadata associated with the image to be lost.

Above, we see an image that has been reframed to remove some pokey sticks and a hole in the top right corner. The resulting image is a little cleaner and more serene.

Below, we have an image that we could reframe to remove the little girl making a silly face, even though there is no reason whatsoever to do that.

Rotation/Angle Adjustment

- This is a good way to fix problems like a crooked horizon line.

- It is important to note that after an image is rotated, it will need to be reframed, in order to keep the image as a rectangle that is not missing the corners.

- To fix a crooked horizon line in Photoshop, use the measure tool to measure something that should be straight. This gives the angle the line is on.

  - Then, select the **Rotate Canvas – Arbitrary** command, which uses the previously calculated angle to determine how much the image needs to be rotated.

  - Once the image is rotated, use the Crop tool to get rid of the now crooked edges of the image.

Sharpening and Blurring

- Sometimes it is necessary to sharpen an image to bring out the detail, or to blur an image to make the background less distracting.
  - A new fad with smartphone photos is to blur the top and the bottom of a photo, to give it an artificial depth of field.
- But, like any processing technique, it is possible to go too far with sharpening and blurring, so play around until you find an effect that you like.
- The easiest sharpening technique to use is the Unsharp Mask filter.
  - Has a few settings to play with, like sharpening radius, amount of sharpening, and threshold for you to play with.
  - Ideally, you want to avoid causing details to be heavily haloed after sharpening.

The original is on the left, and the version that has had an Unsharp Mask applied is on the right.

Altering the Brightness and Contrast

- Sometimes your images end up a bit dark, or a bit too light, as environmental lighting doesn't always cooperate with us.
- Fortunately, there are a few different ways to alter the brightness and contrast of an image.
  - Photoshop has the Brightness/Contrast tool, which has been fixed in recent versions to stop resulting in exposure clipping .
    - The legacy versions of these tools, which would either brighten or darken every pixel in the image, are available, but not recommended.
  - Photoshop has the Burn and Dodge tools to brighten or darken only portions of an image.
    - These tools work like paint brushes, and can be masked using selections to make the process easier.
  - RAW editors allow the user to set exposure compensation to brighten or darken photos as needed.

Here are the results of adjusting the exposure compensation in order to brighten this image up a bit.

And here we have an images where the petals on the iris were darkened with the burn tool in order to bring out the detail in the petals.

Adjusting Colour Saturation

- Sometimes you want to adjust the colours of an image slightly in order to make them stand out a bit more, or to make the image work on a different display platform.
- This is easily done in Photoshop using the Hue/Saturation tool.
    - Although, it is important to note that this will destroy the original colour information once the changes are accepted and saved!
    - There is a way to edit the hue and saturation on a new layer, which does not destroy the original colour info.
- Once you've decided your method of editing, make adjustments to your colours.
    - The Master selection alters all colours at once.
    - You can also choose one or more colour ranges to alter. These ranges include:
        - Red.
        - Green.
        - Blue.
        - Cyan.
        - Magenta.
        - Yellow.
- You can use this method to completely alter the colours in a photograph, if you so choose.

The photo on the right first had the Yellow Saturation increased, and then had the Master Saturation increased.

Intermediate Techniques

- Remove problems with the clone stamp tool.
- Remove small imperfections with the heal tool.
- Use filters to create different artistic effects.
- Creating a digital matte.

Removing Problems with the Clone Stamp Tool

- The clone stamp tool is good for removing small, but obvious, problems from your photograph.
  - This tool copies part of an image over top of the part of the image that the tool is being applied to.
- First, zoom into the area with the problem.
- Next, hold down CTRL, and click on a non-problem part of the image that you want to use to cover the problem.
- Finally, use the mouse to cover up the thing that is the problem.

Original photograph, with arm sticking into bottom right of image.

Edited photo with arm cloned out. The exposure was darkened a tiny bit to make it a little easier to erase the arm.

Removing Small Imperfections with the Heal Tool

- This is similar to the Clone Stamp tool but is a little easier to use for removing things like dust spots on your sensor.
  - Instead of copying part of the image to cover the problem, this tool considers what is in the area that is being edited before it applies the cloning process.
- Can also be used to remove small imperfections that were present in the scene.
- Basically, zoom in to the issue, hold down the CTRL button and click on the "perfect" part of the image to select that for your fix, then clean up the spot on the image.


Sensor spots in the left image were removed from the image on the right with the Heal tool.

Creative Use of Filters

- Filters can be used to achieve a variety of interesting effects on your photos.
  - Make a photo look like a painting with the oil paint filter.
  - Add dream-like effects to your photos using a couple of layers and the Gaussian Blur filter.
  - Make photos look like old photographs with a sepia filter.
- Filters can also be used for things like removing noise, with the Despeckle filter.
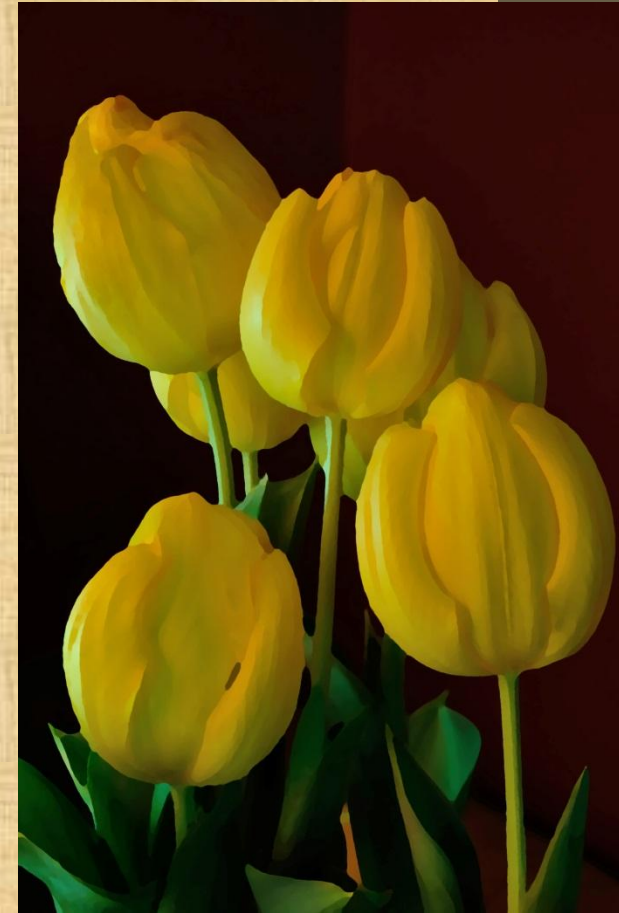
The image on the right was created using the Oilify filter in GIMP 2.8.

Creating Digital Mats

- Adding a digital mat can make an image look more impressive.
- They can also be used to change the dimensions or the aspect ratio of a photo for print purposes.
  - Many camera sensors do not have the 4:5 aspect ratio that a 16x20 print has, for example.
- There are a few ways to create a digital matt in Photoshop.
  - Create a new document in Photoshop that is bigger than your photo, and has the aspect ratio you need.
  - Decide the sort of mat you'd like. Solid colours, or a section of the photograph both work well.
  - Copy your photograph to a new layer in the new document, and decide where in the mat you'd like it to sit.
  - Select the photograph, select a complementary colour, and use the Stroke Selection tool to create a key line around the photograph.

Mat created using a small section of the photograph. The matt was blurred and darkened so that unnecessary detail in the mat doesn't distract from the photo.

Solid colour mat. Choosing a mat colour from the photo using the Colour Select tool is a good way to choose a colour that complements the photo.

These mats were created by duplicating the photograph into two layers, blurring and darkening the mat layer, and clipping out the centre of the matt to allow the photograph to show through. The selection for clipping was also used as the selection to create the key line.
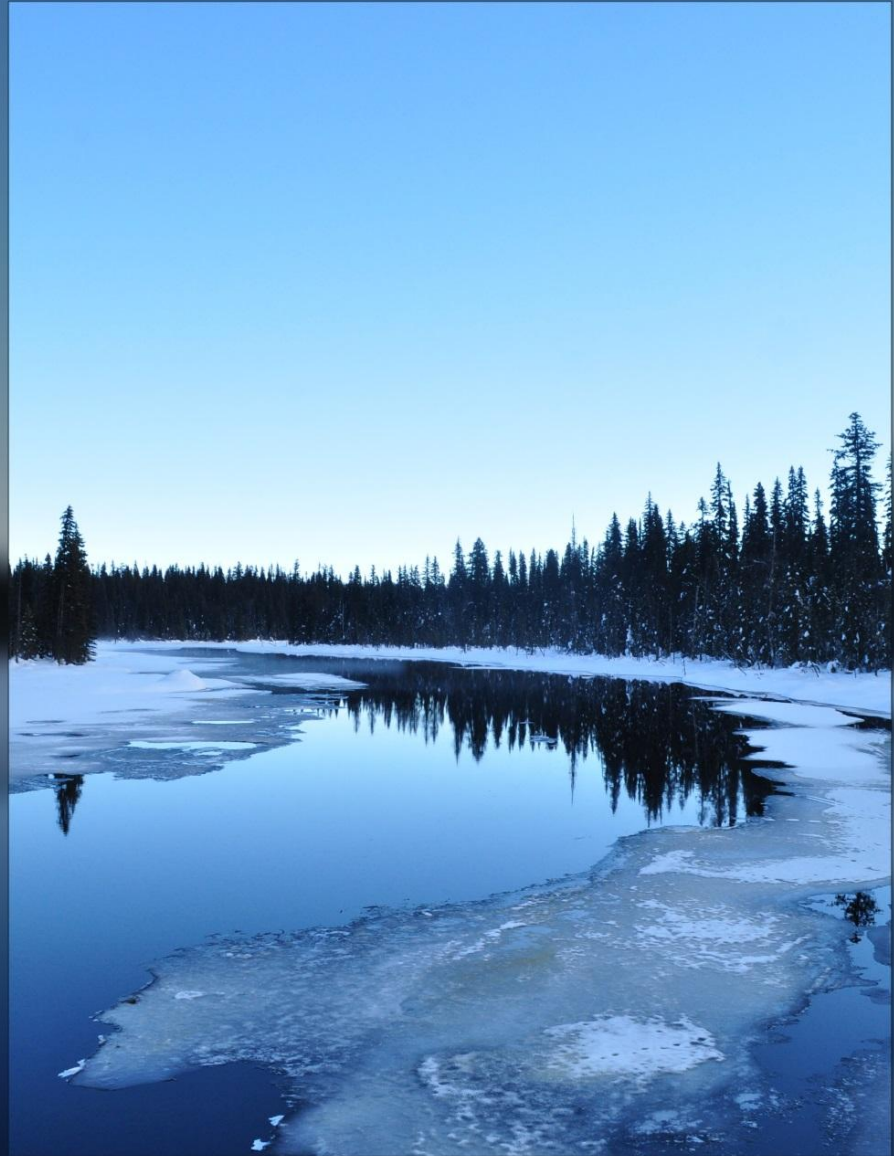
Advanced Editing Techniques

- Focus Stacking.
- High dynamic Range (HDR).
- Digital Double Exposure.

Focus Stacking

- Focus stacking refers to the process of taking several shots of the same subject, and gradually incrementing the focus distance in each shot. It's often used for macro and landscape photography, or for photomicrography (photography through a microscope).
  - For macro shots, this is easily done by moving your camera slightly towards the subject
  - For landscapes, choose manual focus to change which part of the scene you are focusing on.
  - Using a tripod or a focusing rail makes the overlay process easier, as the frames are easier to line up.
- Then in software, the photos are then aligned so the content is overlaid pixel by pixel.
- Finally, a composite image is created by selecting the sharpest areas of each image.

- There are a few different software packages that can be used to generate focus stacks. The two that were most recommended on Flickr were:
  - Helicon Focus
  - Zerene Stacker
- Adobe CS4 does DOF stacking, but it only seems to work for small stacks.
- For this presentation, the trial version of Helicon Focus was used. (Although, trial versions of both packages exist, so you can try them out to see which you prefer.)
  - It tended to create over-exposed photo stacks, so try using slightly underexposed images for the best result.
- Make sure that any edits that the source images require are done BEFORE stacking, because the stacking process will exacerbate flaws.
  - For example, if there are dust spots on five source images, then the final image will contain five sets of slightly offset dust spots.
- It's important to note that when using focus stacking for macro images, it doesn't matter that more of the subject is visible in the frame when the focus is moved back in the frame.
  - This is the result of moving the camera closer to the subject to move the section that is in focus, as many macro lenses are of fixed focal length.
  - The software deals with this for you.
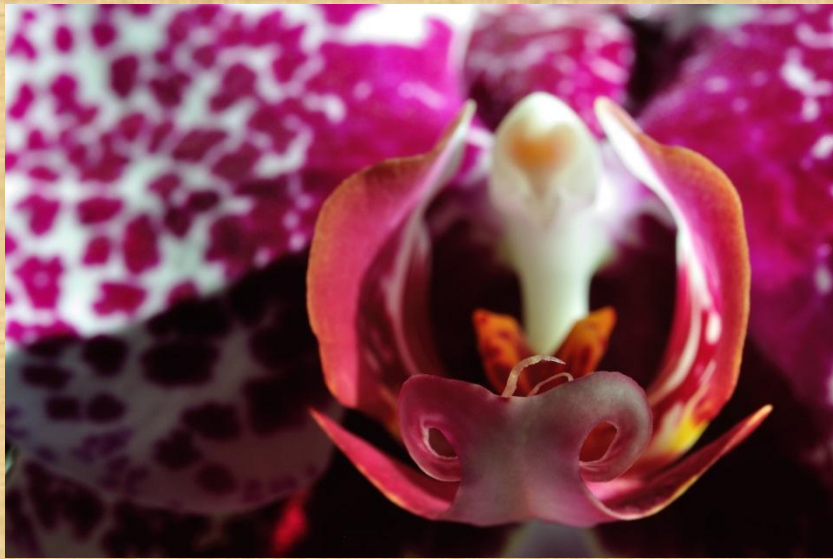
First image in stack. The front of the orchid is in focus, and this frame has the smallest amount of the subject visible.

Second image in stack. The middle of the orchid is in focus, and slightly more of the orchid is in the frame.

The third and final image in the stack. The back of the orchid is in focus, and this image shows the most of the orchid. Fortunately, software dealt with the framing, and selected the frame from the first image for the output.
Some stacks use as few as two frames for landscapes, or as many as hundreds of frames for photomicography.

The final image has the whole flower sharply focused.

High Dynamic Range (HDR)

- HDR refers to the process of taking a few shots of the same scene at different exposure settings, and combining them to get a higher contrast range in your image.
- There are a few different ways to achieve this.
  - In Photoshop, you can create selection masks to choose the properly exposed portion of each image, and then put all of the properly exposed bits together in one photo.
    - Put multiple photos together in one document as layers, and delete the improperly exposed sections of the top layers.
  - Photoshop CS6 has a HDR Pro tool which automatically aligns and merges the images for you, and allows you to edit the final result in Camera Raw mode.
    - Within the Camera Raw editor, you can make changes to the tonal mapping, as well as changes to the white balance, contrast, saturation, and whatever else you might usually edit in Camera Raw.
  - There are also dedicated HDR creation programs such as Luminance HDR and Picturenaut 3.2 which will align and combine your images for you.
    - You may need to tell the software what your different exposure setting were for each input image in order to get the HDR image to turn out correctly.
    - They also have the ability to edit tone mapping to generate the image you want.

Middle exposure from the series of images used for HDR creation.

Resulting HDR image.

Creating Double Exposures on the Computer

- Creating double exposures can be as complicated or as easy as you want to make them.
- Simple method:
  - Select two images you would like to work with.
  - Copy one image to the other image as a new layer in Photoshop.
  - Use the **Opacity** setting to turn the top layer transparent.
  - Fiddle with that until it looks how you'd like.
- Complex method:
  - Almost the same as the simple method EXCEPT you use selections and masks to take a shape from one image to outline the second image.
  - Use filters to get the colours the way you'd like.

Sources

- [Improving Composition with Tonal Contrast](#)
- [Converting Colour Images to B&W](#)
- [Cropping Images in Photoshop CS6](#)
- [How to Straighten Crooked Photos in Photoshop](#)
- [Guide to Image Sharpening](#)
- [Adjusting Hue and Saturation](#)
- [The Ultimate Guide to Cloning in Photoshop](#)
- [Using the Healing Tool in Gimp](#)
- [Photoshop Help/Filter Basics](#)
- [Add A Mat Frame to a Photo with Photoshop or Elements](#)
- [Focus Stacking and Depth of Field](#)
- [Focus Stacking in Macro Photography](#)
- [How To: HDR Photography](#)
- [HDR Pro in Photoshop CS6 – Using ACR](#)
- [How To Create a Double Exposure Effect in Photoshop](#)
- Photography and editing by Dana Schwehr

Extra Resources

- Basic Post-Processing Tools
- Post-Processing Tips for Beginners
- Post-Processing Tips for Landscape Photos
- How to Process RAW Images the Right Way
- Photoshop Help/Oil Paint Filter
- How to Create a Dreamy Fantasy Effect in Photoshop
- Discover Seven Ways to Create Sepia Images in Photoshop
- Photoshop Tutorial: Fashion Vintage Haze Effect Inspired by Emily Soto
- Zerene Stacker - The Basics
- Helicon Focus and Focus Stacking
- DOF Stacking Group on Flickr
- Picturenaut 3