

# TOUCHING-UP USING PHOTOSHOP

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These notes describe how to remove blemishes in photographic images with Photoshop using techniques described by Martin Evening which have been updated as Photoshop developed. Simple touching up can be done quite successfully using Lightroom or Adobe Camera Raw much of the time. Lightroom's Spot Healing brush is relatively easy to use, but there are situations where it doesn't make an invisible repair. You will find these Photoshop techniques much more powerful, and will work in more difficult situations.

Touching up can be as subtle as removing minor blemishes, such as sensor dust, taking out unwanted elements such as litter, telephone wires, scaffolding and cranes; to moving subjects, changing the shape of elements, increasing their size or distorting them. For most images touching up should be invisible, but it can be used creatively.

When you have practiced enough, it is possible to invisibly remove something that merges with your main subject, substituting it with the texture, tone and colour that you want. Photoshop's new Content Aware Fill tool is a major advance, but no one Photoshop tool will do a perfect job. By understanding how the tools work, a combination of them can be used to perform miracles.

Best practice workflow is to do touching up before you do anything else.

The best way to use the following notes is to open up an image in Photoshop, and try out the tools as you read these notes. Try each tool out as you go. Before you remove blemishes, pre-sharpening and noise reduction should have been done. This is best done using Lightroom or ACR. A very noisy image may require working with a Photoshop plug-in.

## STARTING OFF IN PHOTOSHOP - ALWAYS USE LAYERS

Once you have opened your image in Photoshop, ALWAYS work in layers. Most tools will permanently change the image, and if you undertake changes on the background layer its originality is lost. Many recommend using a duplicate layer, and there is nothing wrong with working on one, but you will see what you have done best if you do your touch-ups on a new empty layer. Multiple blank layers can be used and you can change or delete those you don't like. The eraser tool is easily used to get rid of a mistake if it is on a blank layer.

Working with duplicate layers increases the file size significantly, which can slow things down if your computer is lacking in RAM, and will eventually take up more storage space on your hard disk. Duplicating the background layer doubles the file size, whereas adding a blank layer does not change the file size.

To produce a new blank layer, go MENU - Layer > New > Layer (or type Shift-Control/Command-N). This can be named Blemishes or something similar.

Most touch-up tools have three Sample Options:

- The default mode is Current Active Layer. This only samples pixels from the active layer. Nothing happens if the active layer is empty, but it works on a duplicate layer.
- Choose Current and Below to work on all layers below the active layer that are turned on (have the eye tag showing) when you are touching up to a blank layer.
- Choose All Layers to sample all turned-on layers, including those above the active layer.
- You have the option to only work on pixel layers, and not adjustment layers.

The tools can be accessed using the Toolbar on the left-hand side of the photoshop window. Click on a tool to select it, then hover your cursor over the selected tool to see its name and description. All the touch-up tools have an options bar at the top of the window. This is where you find the controls to change options as described below.

## BRUSHING OUT MINOR BLEMISHES

At the start of image development, the spot healing brush, clone stamp and healing brush should be used to get rid of small to medium blemishes, such as sensor dust and litter. As you use these tools, scan over the image at 50% to 100% magnification to see the blemishes and align the tools.

TIP – most of these tools work by sampling areas in the image. Don't crop the image before touching up, do it after retouching is complete. You may want to sample from areas you later crop.

## CLONE STAMP

The Clone Stamp is a brush tool that replaces pixels where you paint with exactly those from an area you have sampled. It needs to match exactly, or the touch-up will show. It is great where the image contains a large area of one texture. With care, edges between two different textured areas can be cloned, particularly if the edge is straight.

With the Clone Stamp, you duplicate one part of the image exactly over another. As an exercise, do this on an image of a bird or aircraft flying against a blue sky, or something similar. You can duplicate the aircraft or bird.

Turn on the Close Source panel by clicking the button with the Clone stamp, next to the Brushes button on the top bar. You can adjust settings in here, but the best thing to do is click the Show Overlay button. Instead of your brush being shown as an empty circle, it is now showing what you are painting with.

The clone stamp works best with a circular-tipped brush, with a medium hard edge, and 100% opacity.

You first need to sample where you are painting from. Hold down the Alt / Option Key and click on the source area. On the options bar, there is a checkbox called Aligned. Click this on, and then as you paint with the clone brush, the sample point is changed as the brush is moved. If necessary, choose a new source point by option-clicking somewhere else on the image.

## HEALING BRUSH

The healing brush works a little like the clone stamp, except that Photoshop merges the healed areas with the surrounding texture, tint and tone. This works well a lot of the time for removing unwanted items against a similar but not identical background, such as telephone wires against the sky, or foliage. You sample in the sky and then paint out defects in the sky. Don't forget to ensure it is sampling layers below.

Firstly, sample from a clean area, similar to the one with the defect. Then paint over the defect. What the healing brush does is use the sampled pixels as the base texture it is applying, but mixes it with the pixels around the area you are retouching. It is reading the pixels up to 10% outside the area being painted.

The brush should be hard edged and at 100% for more controlled results. It is a good idea to use an oval brush, rather than a circular one. This causes the brush to sample more pixels, and the result is less obvious.

The Healing Brush is best used with the aligned checkbox is off for small touch-ups. In aligned mode, as you paint, the sample point moves parallel to the brush stroke. This might be good for painting out a wire across the sky. In non-aligned mode, the sample point does not move. Keep resampling often by Option-Clicking on a different part of the image.

The healing brush works very well repairing areas with a constant tone and texture, but where the flaw crosses a line between two areas, for example a wire crosses the horizon, the areas can bleed together. Switching to the Clone stamp is one way around this problem, but there are more subtle ways, as I will describe below.

## SPOT HEALING BRUSH

The spot healing brush is the simplest method of removing small defects, such as sensor dust. Unlike the Clone Stamp and Healing brush, there is no need to sample pixels. Just select the tool and paint over the blemishes. It automatically samples the surrounding pixels and replaces the defect with these pixels. It works like Lightroom's Spot Healing Brush, but with more control.

It will not work always, and there are a couple of things to do to change its behaviour. Start with setting the Type to Proximity Match. In this mode, it analyses the area around the Spot Healing brush and chooses the best match. In this mode click on and zap away minor spots such as sensor dust.

For larger defects, it is best to have the brush size smaller than the area you are repairing and paint over it. The brush remembers the texture, tint and tone of the area it is moved from. The brush strokes should be from the background into the flawed area. If you are touching up close to an edge, paint towards the edge.

Sometimes changing to Create Texture mode can be tried if Proximity Match fails to work. It generates a pattern within the brush cursor, rather than sampling outside it.

You will probably find Content-Aware mode does a better job. Content-Aware mode is a newer method that requires more cache to work. Generally, Content-Aware mode requires practice to get the best out of it.

- Use long strokes to get rid of unwanted telephone lines in the sky – blend mode Normal.
- Use shorter strokes to get rid of these defects in textured areas – blend mode Replace
- Use a small brush with very short strokes at right angles to the main stroke to break up any obvious edges where blending is still visible.

TIP – To paint a series of straight lines to follow a curve, hold down the shift key and keep holding it down. Click where you want the line to start. Move the cursor to the next position and click, and then the next position and click. Let go of the Shift key at the end of your line. In this way, you can quickly trace a curved wire you want to remove.

## CONSTRAIN HEALING WITHIN A SELECTION

If you try to touch up a blemish that is close to a sudden change in tint or tone using the healing brush or spot healing brush, you will often find that the other area bleeds into the one you are working on. This is because the brush is sampling the other area.

Painting towards the edge minimises bleeding, but is not always successful. Changing the brush shape to a flat oval may help.

The best way around this problem is to make a selection of the area you are touching up, and then touch up this. This will constrain the sampling to within the selection. The Quick Selection tool works OK, but you may need to use other selection tools. It is usually easiest to select the area you want to protect, but then you need to invert the selection by MENU – Select > Inverse (or Shift-Control/Command-I).

## HEALING BLENDING MODES

The range of blending modes available for the Spot Healing Brush and the Healing Brush is similar to that available for Layers.

Most of the time the Normal mode will work well.

The Replace mode will work better in many cases, particularly in the Content-Aware mode.

Other blend modes: Lighten, Darken and Color can be useful for some detail work, such as beauty retouching. For example, darken mode is good for removing light spots against a dark background. Lighten is a good mode for removing dark spots from a light toned background. With skin blemishes, the effect can be made subtler by reducing the opacity of the touch-up layer.

## PATCH TOOL

The patch tool works differently to the healing brushes and clone stamp. It works on a selection, rather than a brush, and is complementary to the healing brush tools.

In its Normal mode, it will only work on a pixel layer and not a blank layer. It will work on the Background layer, but for safety, preserve the originality of the Background Layer, and use a duplicate layer. To copy the active pixel layer, type Command-J (Jooplicate). If you have a blank layer with Clone, Healing or Healing Brush touch-ups, it can be above the Patch Tool layer.

TIP – to keep the file size small, instead of working on a whole duplicated layer, work on a layer with only the area you need. Make a rough rectangular selection of the area you need, then turn this into the layer you will patch. With the marching ants showing you have a selection, copy the selection (Menu – Edit > Copy or Command-C). Then Menu – Layer > Layer by Copy, or Command-J.

The patch tool is used for removing larger defects in an area of texture. It works in a similar way to the Healing Brush, but is much quicker.

If you just select the patch tool, the curser will behave as a polygon lasso tool, but you can make a selection with any of the selection tools first if you prefer, before selecting the Patch Tool.

There are two modes for using the Normal patch tool. In Source mode, you make your selection around the defect you want to remove, and then drag it to an area of texture you want to replace it with.

In Destination mode, you make your selection in the good area you want to cover the defect with, and then drag it over the defect. Whichever method you chose, Photoshop will calculate a new texture to replace the defect.

## THE PATCH TOOL AND CONTENT-AWARE FILLING

Photoshop CS5 saw the introduction of Content-Aware Filling using Menu - Edit > Fill and selecting Content-Aware from the options. Photoshop CS6 modified the Patch tool to include a Content-Aware Mode. Photoshop CC has further developed these tools.

### CONTENT-AWARE FILLING

Content-Aware filling using the Fill tool, with the option set to Content-Aware has been a popular, quick way of removing larger defects. Often the result is lacking. It only works on a pixel layer and the fill is an obvious copy of the adjacent image if it has recognisable features. It works a lot of the time, but you have no control over the area sampled or how it adapted to the repaired area. The patch tool in Content-Aware mode does a better job.

In the version of Photoshop CC issued in October 2018, a new improved Content-Aware Fill Tool was added. Firstly, you can select which parts of the image are sampled. Secondly you can control the adaption of the fill. Thirdly you can see a preview of what will happen before you apply the tool. Fourthly, when you apply (OK) the fill, it can be on a separate layer, and you can choose whether this is a new blank layer or a duplicate of the pixel layer below.

Start by making a selection (marching ants) of the area you want to remove, including some of the background. Then Menu - Edit > Content-Aware Fill. Careful here, because the OLD way of doing a content-aware fill was by Menu – Edit > Fill, and then choosing Content-Aware from the options available. This is still there and works as it always did. If you start up the new tool correctly, you will get a new window with 3 panels. On the left is the working panel, in the centre the preview, and on the right the control panel. There are some tools in a tool bar on the left.

You will see the area you did not select is overlaid with green, denoting it is the default sampling area. The preview will show the defect removed with the current settings. You can modify the sample area by painting with the sampling brush tool. It is usually necessary to remove areas that you don't want to sample from with the Sampling Brush tool in Remove mode, and as you do this you will see the preview showing how the image is improved. You can use the sampling brush tool in Add mode to add areas if necessary. As you work, watch the preview to see the effect of sampling changes. Allow the spinning ball to stop so you can see each change. If you rush things, the window will crash.

You can use the Lasso Tool to modify the area you have selected. Again, watch the preview to observe what is happening. Use the keyboard shortcut E to cycle through the Lasso tool modes – New selection, Add to selection, Subtract from selection and Intersect with selection.

The zoom tools and keystroke H (hand) work just like in Photoshop to zoom into and move around the image.

The clever addition is being able to adjust how Photoshop adapts the fill to the background. Set these options in the control panel (right hand side). The Color Adaption allows contrast and brightness to be adapted for a better match. Try each option and see which is best for your image by viewing the preview. The Rotation Adaption, Scale and Mirror tools are also useful. See the Photoshop web page for examples showing where these are useful.

Finally, before hitting OK, select how the Content-Aware Fill will be applied. The options are Current Layer, New Layer or Duplicate layer. I prefer New Layer, so as to minimise file size and give me a touch-up layer I can use the Patch Tool and Healing Brush on to fix up small areas.

## THE PATCH TOOL IN CONTENT-AWARE MODE

To use the Patch Tool in Content-Aware mode, just click on Normal in the top bar and change to Content Aware. In this mode, you can make your patch on a new empty layer. You can choose a Sample All Layers option so as to sample all the pixel layers that are visible (have the eye ikon).

The Patch Tool, used in Content Aware mode can be used to repair a defect in a much subtler way than the old Content-Aware filling. Firstly, you choose the source point and secondly you can control how Photoshop calculates the blending. If using CS6, go to the Adaption tab and try out the different options. Very strict adaption will behave just like old Content-Aware filling. However, as you try the looser options you see that it will do a much better job of not copying nearby features. Photoshop CC changed the way adaption works. When you choose content-aware you can adjust the structure and the colour adaption separately. A low level equates to a loose adaption, which will result in less likelihood of the source replicating itself. Try out varying both and see which is best for your particular image.

The Patch tool in Content-Aware mode can only be used in Source Mode, which means you select the area containing the defect and drag the selection to a good area. You can't use it in Destination mode.

## CONTENT-AWARE MOVE TOOL

This tool can be used to move elements around an image. It might be that something in your landscape is not quite positioned right from a composition point of view. Provided the element you want to move is not merged with something else, it is easy to reposition it.

This tool works much like the patch tool in Source mode. You draw around the object loosely to make a selection with marching ants, ensuring you have some background all around the edge, and drag to where you want to reposition it. This is great for moving domestic animals around a grass field, or water birds swimming on a body of water. Handles at the corners of the box around the selection can be used for scaling it.

## CONTENT-AWARE MOVE TOOL IN EXTEND MODE

You can use this tool to duplicate selected areas and blend in with a background. The classic application is where the sky has only a few puffs of cloud. Used in Extended mode, the Content-Aware Tool can be used to enlarge the area covered by cloud.

In this mode, the original selected area remains unchanged, the selected area is duplicated and moved to the new area. Reduce the Color and Structure sliders to improve the adaption.

## ALTERNATIVE HISTORY BRUSH SPOTTING

Photoshop has a filter for removing dust and scratches in the menu Filters > Noise > Dust and Scratches. This is really a heavy tool, and is useful only if your image is particularly dirty, as for a scanned print with lots of dust and scratches. In which case, you need to increase the radius to have the effect of removing larger defects. The effect can be reduced by raising the threshold. You will find this tool results in softening the image significantly. The way around this softening effect is to apply it to only the parts of the image where it is needed, by using the History Brush.

Before you apply the filter, click on the History Panel ikon, so you can see the history.

Then click on the ikon at the right-hand side of this panel, and select History Options to get to the History options dialogue box. Select Allow Non-Linear History. This is a useful mode that allows you to move

backwards and forwards through each edit you do and not lose the history. If this is not checked, as you edit something from a previous state, you lose the intervening stages. It's a bit hard to get your head around something only a time traveller can understand, but it's a really useful feature.

Now apply the Filters > Noise > Dust and Scratches filter, with the threshold and radius set to get rid of the noise.

Now select the History brush. Go back to the History panel, and choose the state before the filter was applied. Now in the History Panel click on the empty box next to the filtered state. You will find the history brush ikon in this panel switches to this state, to indicate this is the state you are painting from. With the History Brush options set to Lighten, when you paint over the dark dust spots, they will magically disappear. The areas you have not painted with the history brush remain unaffected by the Dust and Scratches filter.

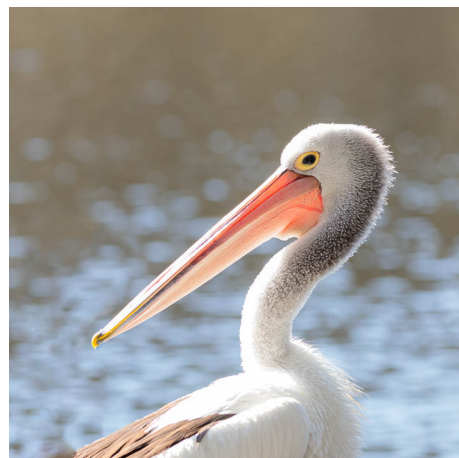
Dr. Who would be impressed.

## CONCLUSION

Photoshop's tools for touching up images are extensive, but with some practice can be used for removing most defects and tidying up the image. The improved Content-Aware Fill is more powerful than the superseded version, but the other content aware tools are still useful in difficult situations.



**Original Raw image**



**Seagull removed with Content-Aware Fill, Healing brush, and Patch Tool**

JST

7 Dec. 18