BURNING & DODGING
on STEROIDS

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I n the film days there was almost always a contrast problem. Rarely did the dynamic range of the world around you match that of your film. For landscape photographers the issue most commonly encountered was that it exceeded what could be captured. A "straight print" from a negative shot under such circumstances exhibited a wide array of tonal issues. Shadows were "blocked up," meaning that the negative was so thin in those areas they simply went darker than the paper could differentiate detail. Meanwhile highlights were "blown out," meaning the negative was so dense in those areas were whiter than the paper's emulsion could show detail. So an incredible array of techniques sprang up to try to solve it.

The most famous (and often most successful) approach for global contrast was The Zone System in which Ansel Adams codified the old rule of "Expose for the Highlights and Develop for the Shadows." Endless varieties and "simplifications" arose as authors cashed in on the common problem and the complexities of Adams' solutions. But all too often even that was insufficient to put detail in the shadows and highlights as well. So such approaches as water bath development, compensating developers, etc. were employed.

And yet, despite all of those efforts, still the negatives often arrived ready to be printed on the paper with some of the shadows and highlights either lacking detail or not of the desired density. The printing stage was then the last chance to rectify the situation and a number of techniques fell to hand including the most common, burning and dodging. In the darkroom, dodging, i.e. light held back during the primary exposure made dark areas lighter and burning, i.e. adding exposure in addition to the primary exposure to light areas made them darker. But control of shapes and small areas as well as smoothly blending these altered tones with the base tones of the initial exposure remained a huge problem for all but the more skilled printers.

In the digital world we have the marvels of HDRI (and to a lesser extent the "Shadows and Highlights" function in PhotoShop™) to replace The Zone System and it has the wonderful characteristic that it works with color where the Zone System, if used with much altered development to color film, could result in unacceptable color shifts. But still, there are times when the file arrives at the final post production editing stage and has need of some local contrast control, that is, burning and dodging all over again.

In the digital world however we have so much more control of this step. Not only can we zoom in and alter densities down to a single pixel if we wished, but there are multiple techniques, each with its own unique "look" and outcome, that we can employ so that the final image corresponds ever most closely to the photographer's vision.

The main digital approaches we will consider in this handout are:

- **The Burn and Dodge tools**
- **Using an Overlay Layer**
- **Simulating Contrast masks**
- **Using Layer Masks**

Each has its pros and cons. You should learn each so you can select the right editing tool to achieve your own specific visual goals. Unless noted in the text, these approaches work and are applied the same in all versions of PhotoShop.[1]

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BURN & DODGE TOOLS

PhotoShop's Burn and Dodge tools are a nearly perfect analog to the darkroom techniques of the same name. The Burn tool allows you to use a brush of any size from one pixel to 2500 pixels, and of any degree of soft or hard edges to darken areas of the image and blend seamlessly with the surroundings. The Dodge tool has the same capabilities except it is used to lighten specific areas.

Both can render their effect in any percentage of exposure from 1% to 100% for the precise amount of effect you want. These modifications to the tools are in the

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[1] CS4 however has moved some menu items around and worse, now only shows part of a drop down menu. If you are just sure you are looking in the correct menu but do not see the function or selection you want, go to the bottom of the drop down list and click to show all menu items. This makes me crazy since most of the functions I use seem to reside in the "hidden" parts of the menus. Also my illustrations are from a PC but the Mac is nearly identical in terms of use.

tool settings bar just below the main menu bar and will change with each tool you select. Here is what it looks like for the Dodge and Burn tools
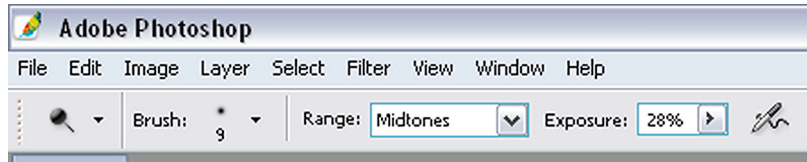
Here the brush is a 9 pixel soft brush, the range is set to mid tones which is the best general setting (avoid using the highlight range) and the exposure is set to 28%.
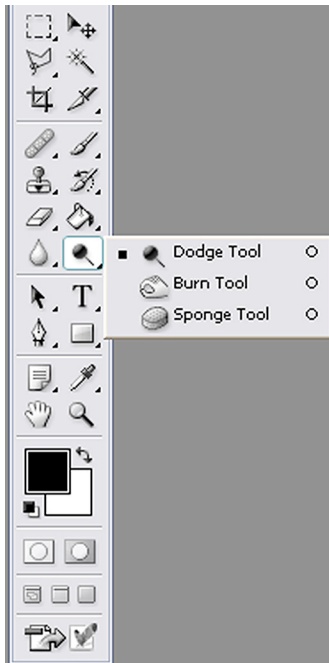
The Dodge and Burn tools themselves are found in the tool bar usually on the left of the screen as shown here. (In the same tool set is also the "Sponge" tool used to saturate or desaturate selected parts of the image.)[2]

Additionally, when you are working with either, by holding down the Alt/Option key you can toggle back and forth between the two on the fly. It all sounds perfect and easy to use.

Well, these tool *are* easy to use. But they are *not* perfect. They work fine on a grayscale image but just as in the film world, on a color photo they have some limitations especially when trying to dodge highlight areas.

The greatest weakness is, just as in the color printing world, burning and dodging, other than in very small amounts, sometimes effect a color change in the areas being editing. And digitally burning a highlight can results in the world's ugliest grayish mildew-like tone being created.

Additionally it is a destructive process that is hard to recover from mistakes if they are discovered many strokes after they were made. Burning back in over a mistakenly dodged area, and vice versa, does not always accurately replicate what was there in the first place even with the same exposure percentages selected.

My bottom line in my own work is that although there are times when I still use them, it is usually reserved for those infrequent times as the editing is almost done when some very slight tweak to the tonality of an area seems called for. And then it is rare the exposure change is over 10% to 20%.
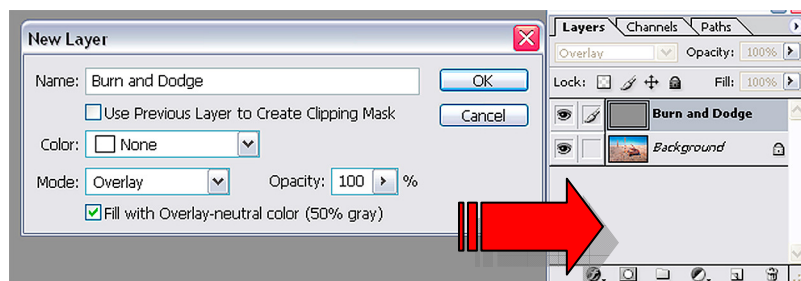
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[2] The illustrations here are from CS1. CS4 changed the default appearance of the tool bar into a single row to save some more screen space for the image but the settings bar is virtually unchanged.

So I would suggest learning to use them by playing with them and seeing the results on your own images. They are nearly intuitive to use and therefore easy to learn. But for our purposes here we are going to concentrate on the more complex but also much more satisfactory solutions to editing selected areas of the image.

USING AN OVERLAY LAYER

This is the darkening and lightening technique most often taught or discussed in texts and workshops. It is popular because it works and has far less unintended color shifting as a result. Although it does take a few more preparatory steps that the simple burn and dodge tools, once ready to go it is very simple to use. Here are the steps to follow:

Step	Action	Result/Note
0	Make sure all of the global editing has been done.	For a predictable workflow that builds steps one on another see the handouts on workflow.
1	Open a New Layer with **Layer➜New Layer**	This will open the following dialog box

2	For the handout I renamed this to "**Burn and Dodge**." Set the Mode to **Overlay** and check the box that says "**Fill with Overlay-neutral color (50% gray)**. Then click OK.	This will create a gray layer on top of your original background layer. Make sure in the layer's Pallet, the mode also changed to "**overlay**" and if it did not, change it now.
		When the layer mode is set to overlay then you will see the image as if nothing has happened.

3	The process should have automatically set the brush colors to black and white. If it did not, then do so now manually.	
4	Select the brush tool and set opacity and edge to the desired settings.	I would suggest you start with a low setting (10-20%) and build the effect slowly with repeated applications. This allows you to blend areas much more smoothly.
5	Anywhere you paint with black, the image will get darker and without changing color. Anywhere you paint with white, the image will get lighter without changing color	Note: if the little grey icon representing the layer on your layers pallet is big enough on your screen, you can see where you have painted in the black and white colors.
6	When finished, flatten the image with **Layer→Flatten Image**.	

This is the simplest, cleanest way to edit *a la* burning and dodging without being destructive. Until you flatten the image the background layer has not been touched. And you can always erase through or use a layer mask to return an area to the original state.

SIMULATING CONTRAST MASKS

In the film world if Zone System, contrast burning and split toning still were insufficient to handle tonal ranges, and if you had shot in large format, you could then make and use contrast mask techniques for further control of highlight and shadows in the printing stage. As noted above, if you shot color, messing with the development also messed with color balance and there was no variable contrast color paper. Exposure changes also had an effect on color so you learned to adjust filtration along with exposure which made selected burning and dodging while maintaining accurate color tricky and sometimes not possible. So contrast masking was about your only option.

The contrast mask itself was made with litho film exposed to give the proper (it varied with the needs of the primary negative) exposure for critical tonal areas and then development was varied to control the densities in those exposed areas.

This mask was sandwiched in registration with the main negative but often, between the original negative and the contrast mask, was a sheet of slightly diffused acetate or Mylar. From that process we derive the term "Unsharp Masking" because a by-product of the process of smoothing out tones was that the contrast on the edges of tones was enhanced creating the illusion of greater sharpness. You can really see this effect in Dye Transfer and tri-color carbro prints where it was standard practice[3].

With digital photography that practice has pretty much disappeared. Photoshop allows similar control; especially with the "Shadows and Highlights" function or using layering techniques that it had pretty much been a bit of lost lore. The nail in the coffin was the rise and common use of HDRI approaches to contrast and tonal control.

But HDRI as well as the Shadows and Highlights function has a different look than the old film-based unsharp contrast masking. So I was pleased to watch my friend, Stephen Burns, demonstrate a simulation of the old process in Photoshop using L*A*B color. Now here is another optional tool in your tool kit for tonal control, with another possible "look" as a result. Below is the original image we will work on.

NOTE: Unfortunately this technique can only be done in a later version of PhotoShop from CS2 and later.

Only you can decide which approach better renders your vision for a given scene, but if you were not altogether pleased with the look of the Shadows and
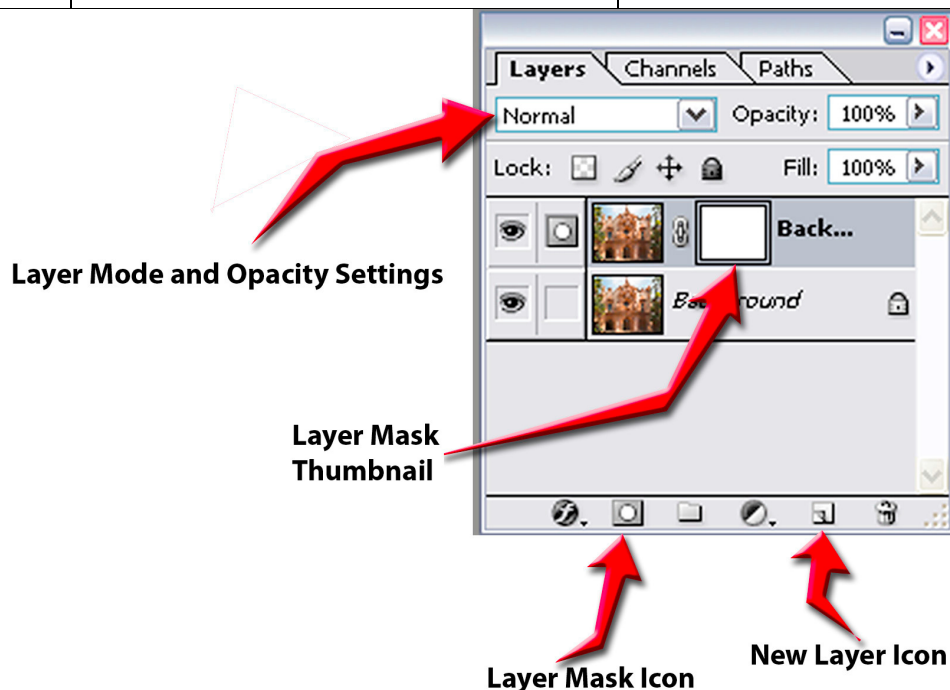

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[3] Take a close look at the Dye Transfer prints of Eliot Porter to see this effect clearly. Had he been making digital prints we might even pronounced them to be "oversharpened" but as a darkroom technique it simply created a different, if edgy, look to the prints.

Highlights function and you had not shot an HDRI sequence but DID shoot in raw and with a nearly perfect exposure, here, with a tweak or two from me, is a very workable option for you, following Stephen's[4] technique.
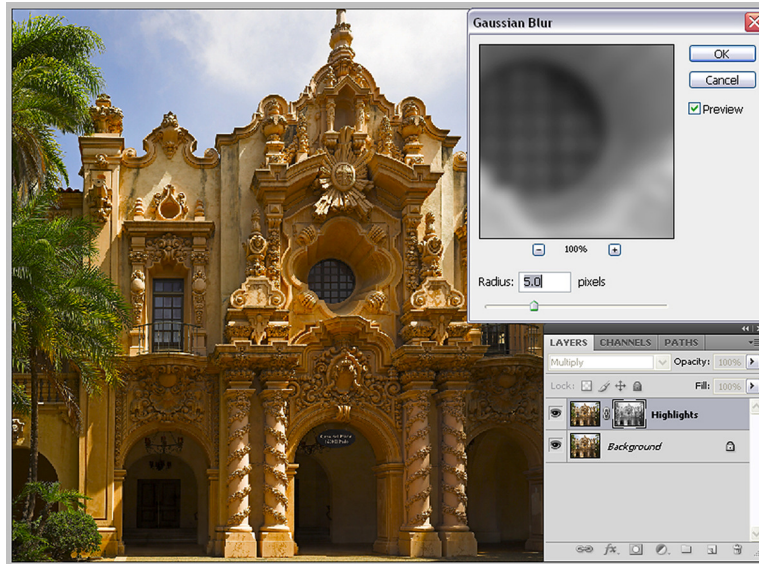
NOTE: This is one of those processes in which the sequence of the steps is critical for success!

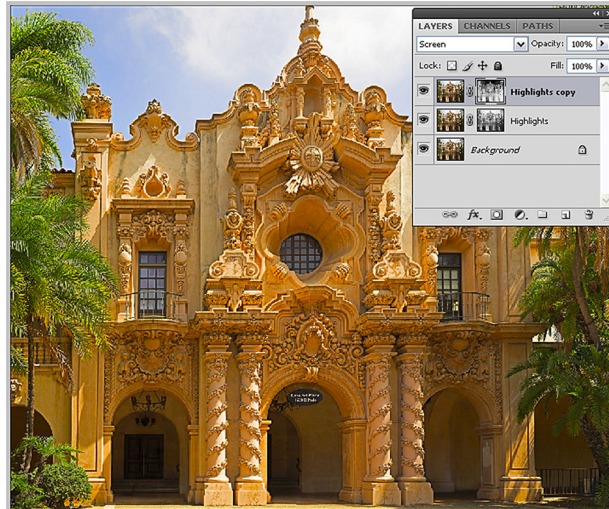| Step	Action	Result/Note
0	Make sure all of the global editing has been done.	For a predictable workflow that builds steps one on another see the handouts on workflow.
1	Create a Duplicate File. You can do this in one of two ways: 📷 Using the main drop-down menu (**Layer→Duplicate Layer**…) or 📷 Dragging the background layer to the new layer icon at the bottom of the layers pallet.	First we will deal with the highlight portions of the image by creating a special layer mode and mask. To keep track you might rename this layer "Highlight adjust"

Layer Mode and Opacity Settings

Layer Mask Thumbnail

Layer Mask Icon

New Layer Icon

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[4] Do check out Stephen Burns' latest book on Photoshop tips and trickery.

2	Turn the duplicate layer into a Layer Mask by either: 🎞 Clicking on the Layer Mask Icon at the bottom of the layer's pallet, or 🎞 Selecting **Layer➜Layer Mask➜Reveal All** from the main menu bar.	Note: In CS4 with its irritating truncated menu lists, you will have to go to the bottom of the layer menu and select **Show all menu items** in order to access the **Layer Mask** selection.
3	Change the Color Space from RGB to L*A*B space with **Image➜Mode** then check **Lab**	A window will ask if you want to flatten the image, tell it to NOT flatten it.
4	Open the **Channels** Pallet	This is usually a tab in the same pallet window as the **Layers**.
5.	Click on the **Luminosity** Channel	This selects the grayscale channel in the L*A*B color space.
6	Return to the Layers Pallet	
7	Check on the Layer Mask Thumbnail to make sure it is active	You should see the double "frame" lines around the thumbnail.
8	Assign the Luminosity Layer to the Layer Mask by selecting **Image➜Apply Image** (In CS4 you will have to expand the **Image** menu to see all menu items.)	You will now see a small thumbnail of the grayscale channel in the layer mask window of the layers pallet.
9	Set the Layer **Mode** to **Multiply**	You can now see a color image but the contrast will look off. However the highlights are being brought down to a workable level.
10	With the layer mask still active diffuse the image by selecting **Filter➜Blur➜Gaussian Blur** And set the intensity to (usually) between **5** and **20**.	The degree of blur will have a major effect on the spread of tones in the image. Adjust first the degree of blur and then the opacity of the layer until the highlights are looking as you desire. Pay close attention to the previewed image to see the effect of these changes on the tonalities.

11	Duplicate the top Layer by either • Using the main drop-down menu (**Layer→Duplicate Layer**…) or • Dragging the background layer to the new layer icon at the bottom of the layers pallet.	Now we will deal with the shadows by creating another but opposite type of layer mode and mask. You might rename this layer "Shadow adjust"
12	Click on the Layer Mask Thumbnail and invert the image using **Image→Adjustments→Invert.**	
13	On this layer change the **Layer Mode** to **Screen**.	For many images this will be enough. You can adjust the amount of blur and the opacity of the layer to suit your needs. Sometimes however, the shadows are still weak and need a bit more of a hit. That is the case with our example so we will repeat the shadow mask layer steps.

13 Cont.		Unfortunately (and this will vary with the colors of your image) the process has really boosted the saturation of the colors in the image. We will need to tone it down to make it a bit more natural. But working on the top layer of this stack will do virtually nothing to the saturation.
14	We need to have a layer that is like a single flattened layer but in which all of the other layers are still intact should we need them. So create a NEW blank layer by clicking the New Layer Icon.	This creates a blank layer with nothing on it so it is completely transparent and the screen will look as if nothing has happened.
15	Limber up your fingers and together press these four keys: [Ctrl] [Shift] [Alt] [E]	This convoluted key punch performs an interesting function called "**Stamp Visible**." That process creates on this new layer an image that is identical to us having flattened the lower layers. I labeled this layer "Combined" In the following illustration notice the settings for the layers. We only needed partial opacity to give us some dark but still luminous shadows.

16	This particular image really had the reds and some yellow over saturate through the process. To get rid of the garish color I then desaturated the reds and yellows using the Hue and Saturation function: **Image➜Adjustments➜ Hue/Saturation**	Every image will be different. Some will go through the process and look fine or possibly even improved a bit. Others, like the sample here, oversaturated two colors. Because each image is potentially unique in this you will need to adjust the colors as applicable for each specific file.
19	Flatten the Image using **Layer➜Flatten Image**	
20	Return to the RGB Color Space by accessing **Image➜Mode➜RGB**	You are now done.
	OPTIONAL STEP: I wanted to darken the blue of the sky a little so followed the instructions in my handout on "Simulating a Polarizing Filter"	If the file is OK at this point then prepare to save or do any further operations you wish. My final version is shown below.

BLENDING with LAYER MASKS

This approach lets you do far more than simply lightening or darkening an area, it also allows you to selectively add or change color. It combines two of the most powerful of PhotoShop's editing tools: layers and masks all at the same time.

Above we worked with both of those tools. We created new layers of various types and also used the layer mask to allow us to selectively "see through" the top layer to the bottom layer depending on the opacity of the "hole" we were making. Now we will do this with a vengeance to give us incredible editing power over selected areas of the image.

The example I chose was a dawn shot in the Alabama Hills. I'm OK with most of the image but the foreground not only needs some attention to bring it to life, it is also an ugly blue grey sine it was completely in shadows. I want to make it

look like some of that pretty dawn light was spilling over on to it because that is the way I recall "feeling" it when I was standing there. Here is the starting point
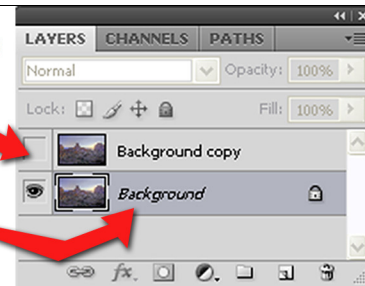

I want to brighten the rock faces that are facing the light and add some sparkle to the foreground brush. Here are the steps to take…

Step	Action	Result/Note
0	Make sure all of the global editing has been done.	For a predictable workflow that builds steps one on another see the handouts on workflow.
1	Make a Duplicate layer just as we did in the previous example. However in this case we will be working on the bottom (**"Background"**) layer.	To make sure we are working on the background toggle the "Eye" icon OFF on the top/copy layer and activate the bottom layer by clicking on it. You should see something similar to the illustration below.

"Eye" is turned OFF

Bottom Layer is Highlighted

| 2 | Paying attention ONLY to the areas you want changed, make whatever tonal and color modifications you want. | For this example I lightened the mid tones with curves and using photo filter and color balance imparted a dawn coloration to the rocks and shrubs. Of course this effected the whole layer but I'll solve that in the next step. |

3	Now I will return to the top layer by clicking on its "Eye" icon and on the layer name. Then I will turn it into a layer mask by clicking on the Layer Mask icon or by using the menus with: **Layer→LayerMask→Reveal All**	When you create the Layer Mask it should turn the colors in the tool bar Black and White. If it does not, then do so manually now.
4	Select the **Brush** Tool and set the opacity to around 20% or lower. I also use a very soft brush setting so that it is easier to blend areas smoothly.	When you "paint" with the brush set to **Black** you will erase the top layer to reveal the bottom layer. When you paint with the brush set to **White** you will paint back the top layer to hide the bottom layer. The opacity setting will determine the degree of change.
5	When you are finished you can flatten the image and save it. Or you can do the "Stamp Visible" we did in the Contrast Masking section and then repeat this procedure for other modifications.	Below is the final version.

The change is subtle as it should be. We don't want it to look phony, just a bit better than the camera captured.

CONCLUSIONS

There is nothing to prohibit you from using combinations of any or all of these approaches in order to make your shot look exactly as your vision for it requires. Taken separately or together they form a very powerful arsenal of tools for you to start enhancing your images.

Remember, even if you are shooting HDR or other specialized images, whatever comes out of the generator for those images should still be thought of as merely a "negative," an intermediate step in the process that has you now ready to get serious about editing the file and making it the very best it can be. These steps will be taking you beyond simply being a camera operator and into the realm of the artist who MAKES photographs and does not just TAKE snapshots.