

The Camera Club

B&W Negative Processing After Scanning.

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That's how to scan a negative, now I will explain how to process the image using Photoshop CS5.

To achieve a good scan we want to record as much detail as possible, and then *keep* it, by doing the absolute minimum of destructive processing; the steps and the sequence we use them in can have a big impact on the finished image.

We are going to use the scanner just for scanning and ALL the processing will be done in Photoshop. The reason for this is Photoshop offers more versatility and subtlety than the scanner's software so let's use the best option.

We will turn off (un-check) all the Epson processing options, and scan as "Positive film" so it does not even invert the image.

You may assume that to get the best quality you should scan at the highest bit rate and highest resolution, and then save it as a TIFF file. It's a nice idea but the file size will become frighteningly large, take hours to scan and ages to process, and you don't need to do it to get good results.

We are going to scan at 8 bit and save as a JPEG!

This will keep our file size manageable but there is more to this choice. The signal / noise ratio of a scanner is constant, so the higher the resolution of the scan the less noise there will be. A 4800dpi, 8 bit JPEG will show much less noise than a 2400dpi 16 bit TIFF file but the TIFF file will be enormous.

The actual size you choose to scan at should depend on what you are going to do with the scan. Remember that if you are only going to post it on the Internet then you will not see any improvement in apparent quality at a resolution above 72dpi, and the image will be 700 x 800 pixels at a maximum.

If you are taking the time to scan the negative you may as well make a good job of it so that you have it if you need it in the future.

I always scan at twice the final size I want.

The resolution you scan at may be dictated by the size of your negative. A 24x36mm negative at 4800dpi will be a much, much smaller file than a 6x7cm negative so you may choose to scan smaller negatives at higher dpi than larger ones.

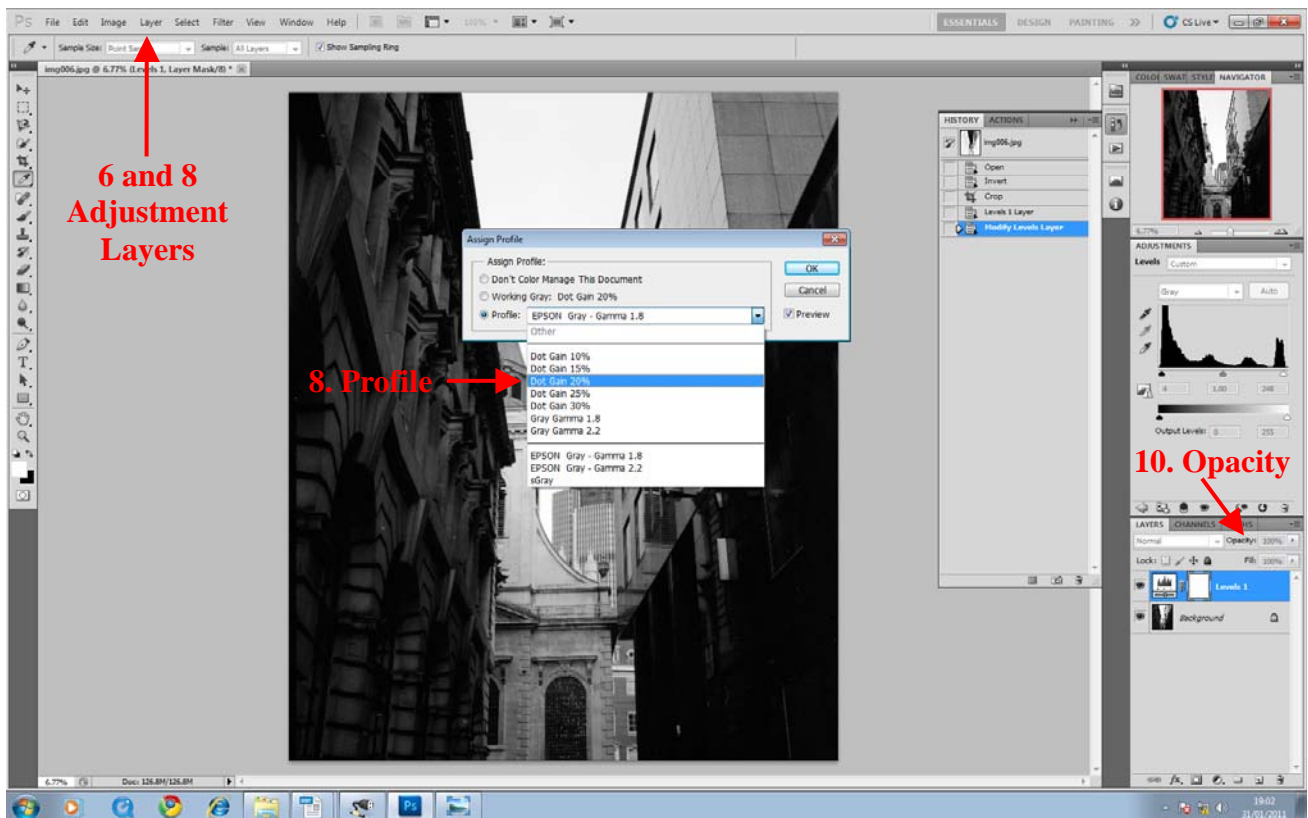
In my example I scanned a 6x7 negative at 4800dpi and got a 400Mb file. The workstations in our digital suite handle this amount of data without any problem. The finished file will be much smaller than this.

Processing in Photoshop CS5

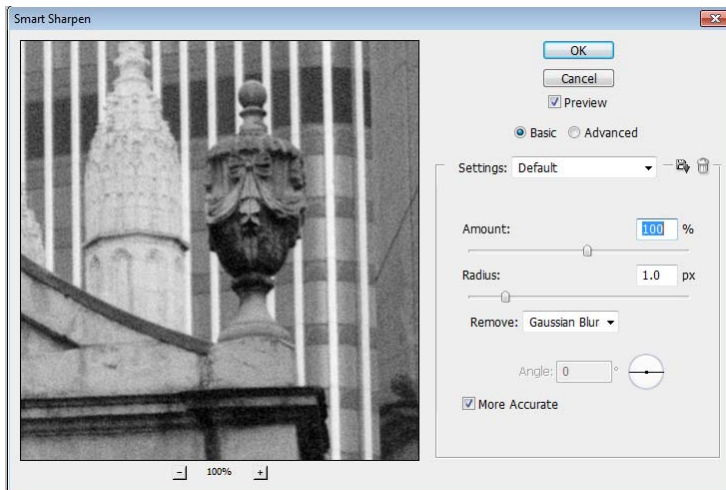
Once we have saved our file we need to open it with Photoshop.

We will do very little processing to preserve the image data. What we do is done in a sequence and in a way that data destruction is minimised. Remember that most processing will increase grain / noise.

1. Open the image file with Photoshop.
 2. Click “Image” – “Adjustments” – “Invert”, to give us a positive image.
 3. Rotate (if necessary) to get the image upright.
 4. Fine tune. Set the horizon or verticals if they are not spot on.
 Select the Ruler tool from the Tools sidebar (it’s near the bottom on the same button as the eye dropper tool).
 Draw (click and drag) a line along the horizon
 Go to “Image Rotate” – “Arbitrary” there will already be a value in the Rotation Degrees box.
 Simply click OK and the image will be rotated to set the horizon level.
 Now trim the image. You obviously have to lose something around the edges.
- If you do not need to do this fine-tuning then just trim the image to remove any border (go to 5).
 With verticals it is not always that easy and you may want to experiment with different amounts of rotation to get the most natural appearance. Remember to apply the rotation, and if you don’t like it, click “Undo” and do not just apply another amount. If you keep clicking rotate 1 degree, rotate 1 degree, until you are happy, the image will go horribly wrong!
5. Next we need to crop the image to remove any borders, this will ensure when we set black and white points they will actually be derived from detail in the image and not possibly from the border.
 6. Create a “Levels Adjustment Layer”. “Layers” – “New Adjustment Layer” – “Levels”
 Name: Levels 1
 Colour: None
 Mode: Normal
 Opacity: 100
 Now click “OK”
 7. Click “Auto” this will reset the black and white points to actual values that exist in the image.
 8. Select “Edit” then “Assign Profile” and choose the bottom option “Profile”. Now experiment with the various Dot Grain values to get the best looking contrast. Doing it this way will change the contrast without affecting the noise / grain level. (If you do this with curves it will have an effect on image noise.) Remember to treat this just like making a print, so watch the highlight and shadow detail to judge the correct contrast. I chose Dot Grain 20%.



9. The image may still look a bit flat. Next, create a “Curves Adjustment Layer”. “Layers” – “New Adjustment Layer” – “Curves”. Because of what we have already done we will only need to make a small adjustment. So experiment with *small* curves to increase the contrast. The bigger and more complex the curve, the more noise / grain will be introduced. A lot of Photoshop tutorials advocate wild shaped, complex curves as if this is being really clever. You are doing something wrong if this is the only way you can get the look you want!
10. Now use the “Opacity” slider of the Curves Layer to get the tone you want. This is much quicker, easier and more accurate than trying to do it with the actual curve shape.
11. You should now have an image that you are happy with. Next you need to commit your changes.
12. Go to “Image” – “Mode” and change to 16 bit.
13. Flatten the image. This actually modifies the pixels of our image for the first time. To do this right-click on “Background” (the bottom layer) and select “Flatten Image”.
14. Retouch. We do this now because you may have missed something earlier when the image was dull and flat. However careful you were when cleaning your negative I bet you will find some white dust spots. You need to remove these. Select “Actual Pixels” and start in one corner. Progressively look at the whole image and most of the time the “Spot Healing Brush” is the best tool for removing spots and hairs, etc. Retouching is another whole tutorial so I will not dwell on it here. Your “History” will probably show a lot of retouch; I just included one to keep it short.
15. Re-size. “Image” – “Image Size” In this case I am reducing from 4800 to 2400dpi. Doing this will smooth the image and reduce noise. The histogram will have banding that was introduced during the processing; downsizing will remove this and restore the smooth continuous shape (no “missing” data).
16. Now we should apply a little sharpening. This is a really good trick that will most noticeably cut through distance haze, and give the final image a slightly crisper look without ruining the shadow detail.
 First select “Filters” – “Sharpening” – “Smart Sharpen”. Then on the “Sharpen” tab, set “Remove” to “Gaussian Blur” and tick “More Accurate”.
 Set to 100% and a low “Radius” of around 1.0 to 1.5.

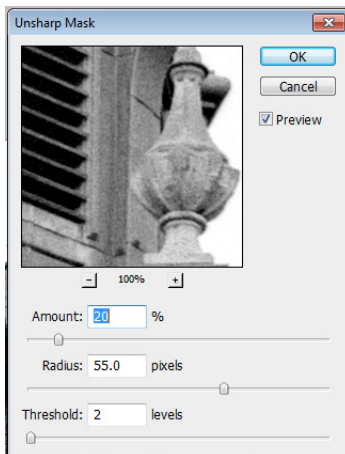


Next select “Un-sharp Mask”.

“Amount” is low, around 20%.

“Radius” is high at 50 to 60.

“Threshold” is low at between 1 and 4. You can experiment to see what looks best.



That is it! The image is perfect.....well it **should** be!

Now we need to turn it back to 8 bit and make sure it has a profile format that will work on printers and on the web. B&W JPEG formatting is not standardised in the way colour has become, and if you ignore this then automated guessing may screw up your image at the last moment. There are good standard colour profiles so we are going to convert it to use sRGB. Remember that grey tones are just some more colour data to the world inside the computer. Converting to colour first is the best way.

22. “Image” – “Mode” – “RGB Colour”.

23. “Edit” – “Convert to Profile” – Destination Space “sRGB”. Change Intent to “Perceptual”.

24. “Image” – “Mode” – “8 bit”

That’s it: a quality image file that should suit most things.

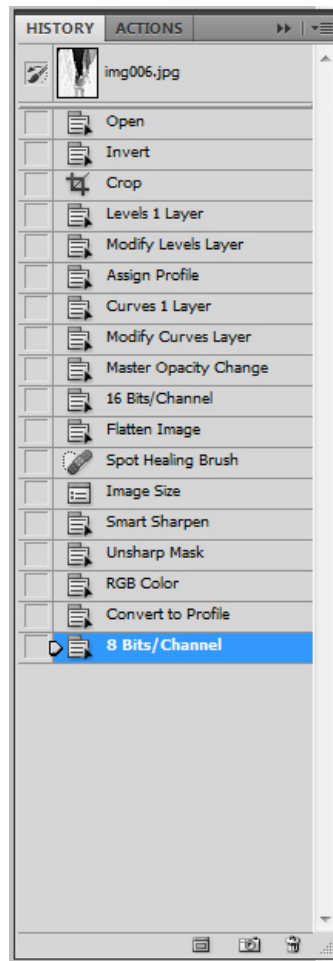
Now (and only now) can we save our file. Remember that every time you save a JPEG file it will be degraded, so we only save it once when we have finished.

25. “File” – “Save As” – choose a location to save it to and click “OK” then you will get the JPEG Options window, Save at the maximum quality (largest file).

Now create a smaller copy if you want to use it on the web (to post on your web site, Flickr etc). Click “File” – “Save for Web and Devices” and size it to suit your needs 600 – 700 high or 700 – 800 wide will fill the screen. Save for Web converts the file to 72dpi and strips out the Exif data etc. to reduce the file size as far as possible.

In the “Save for Web” window you have the option to resize and change the JPEG compression, so this is the place to set the image size if there are file size restrictions where it is going to be posted.

Here is the final “history” for the processing I have done.



If you want the ultimate quality for huge prints (and huge files!) then you could scan at more than 4800 and work in 16 bit and save it at 16 bit as a JPEG 2000 file, but make sure the person doing the print can read JPEG 2000. The scanning and processing time will become much slower but if you need the quality you will have to be patient.