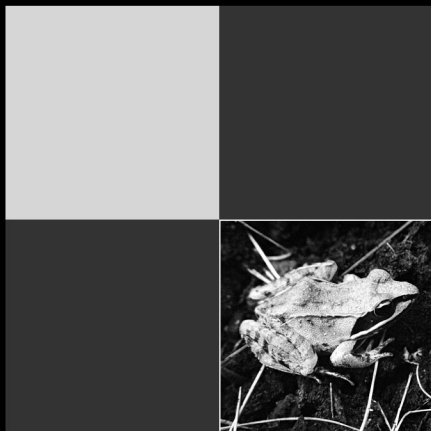


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Technique practice

"exposure pushing"

Push Processing

Push processing in photography, sometimes called uprating, refers to a film developing technique that increases the effective sensitivity of the film being processed. Push processing involves developing the film for more time, possibly in combination with a higher temperature, than the manufacturer's recommendations. This technique results in effective overdevelopment of the film, compensating for underexposure in the camera. >> http://en.wikipedia.org/wiki/Push_processing <<

In terms of differences between a photograph produced in a regular fashion and one produced by "pushing," there are a few visual elements that can be intentionally used for artistic purposes.

The **contrast** will likely be one of the first elements that you may notice being different. The contrast will be considerably increased; **overall**, decreasing the dynamic range of the image, practically displaying less steps of light between the darkest and the lightest tones, but also **locally**, amplifying the differences between adjacent tones, causing fine details to become more noticeable. Within the sample image, you may notice a stronger feel of **depth**, especially in the earthy areas, making it more obvious which parts are raised, and which lowered. Another repercussion is the **increase in "film grain,"** or **"noise,"** due to the brightening process.

On a slightly more subjective, artistic, note, the resulting image displays a considerable lack of mid-tones. As mentioned above, the scene is recorded in less of a dynamic range, but the lack of tones ends up coming mostly from the mid-range. In terms of perception, the result is an image that feels overall darker, more serious, perhaps slightly less cheerful.

These elements are valid for both film, and digital, photography. The differences between the two are mostly found in the post processing process, where digital processing offers slightly more options in terms of manipulating the initial data.



*The resulting image after performing the digital equivalent of exposure pushing.
1/100sec, ISO1600, f.8*



Above: The preview image created by the RAW Therapee (<http://www.rawtherapee.com>), a RAW image file format editor upon opening the image photographed in order to be put through the "exposure pushing" procedure. This view is before any of the settings have been applied.



Left: An exaggeration of the RAW file's colour saturation clearly depicts the general lack of colour information available. This is due to the very short exposure which permitted for only a limited amount of light to be recorded and thus an even more limited amount of colour information.

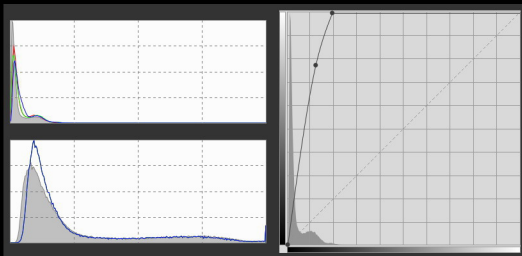
Although the general idea of "exposure pushing" is the same between film and digital photography, the workflow differs quite a bit. Both cases begin with a picture being taken by the camera in such a way that the metering (which in regular conditions would suggest a shutter speed and aperture combination that would produce an average exposure) is either biased to purposely produce an underexposed image, or altogether overridden for this purpose.

In film photography: it is imperative that the amount by which the image is underexposed is known to the photographer for when the film gets developed. That is because in this stage the fact that the film has been exposed to less light will be compensated for, usually by exposing it to the development chemicals for longer, and in some cases by applying a different proportion of chemicals. For the sake of simplicity, usually underexposure is done in terms of 1, 2, or 3 light stops, in order to be easier able to calculate the compensation needed in developing the film. If the amount of underexposure is unknown, it is likely that the film will be developed as if the exposure had been regular and a very dark image would be the result. At this stage, a successful recovery is unlikely.

In digital photography: we get to take advantage of the luxury of undestructive processing. In other words, we get to try out as many different approaches to processing a RAW image file as we like, without causing irreparable damage to the initial file. If the amount of underexposure is known to the photographer, then it is possible to compensate for it and produce an image that will share the lightness of a picture taken at the proper exposure, but with the "look" of "pushed exposure." However the true strength of this technique, in the realm of digital photography, lays within the fact that undestructive processing, along with the ability to gain an instant preview of what the end result may look like, provide huge artistic freedom, compared to the application of mathematical rules in order to alter film development.

The pushing process: Practically, when you begin the post processing of a RAW file meant to be used, you are faced with a very dark image, with little, to no (in some cases), colour information in it. In this example the resulting image will be black and white, which was a decision I made for esthetic reasons. You can see the original rendering of the RAW file next to the end result below. The histogram on the top (to the right), reflects the distribution of information (brightness and colour) throughout the image: most of the information is found in the darker 1/4th of the image. This is the useful information captured by the camera, which we need to spread out evenly throughout the final image's visual information spectrum.

The end result is represented in the second histogram (below the first), where the available information fills the entire graph. Now there are various ways of doing what we need to do, which is to practically brighten the initial dark image. The means I found to be the most straight forward and practical for this example is using a tone curve in LAB mode, affecting only the Luminance (brightness) of the image. The curve graph is visible to the right. The top right corner of the graph (representing the brightest point in the image) has been dragged to the beginning of the actual usable data, and thus, what used to make up 2/10ths of the entire graph, now take it up entirely. **Note:** Additionally, the saturation of the image has also been reduced to zero in order to produce the black and white image.



Top Left: histogram of the RAW file before processing. Right: curve adjustment on the Luminosity layer. Bottom Left: the resulting histogram depicting the lightness and colour data distribution in the final image.

