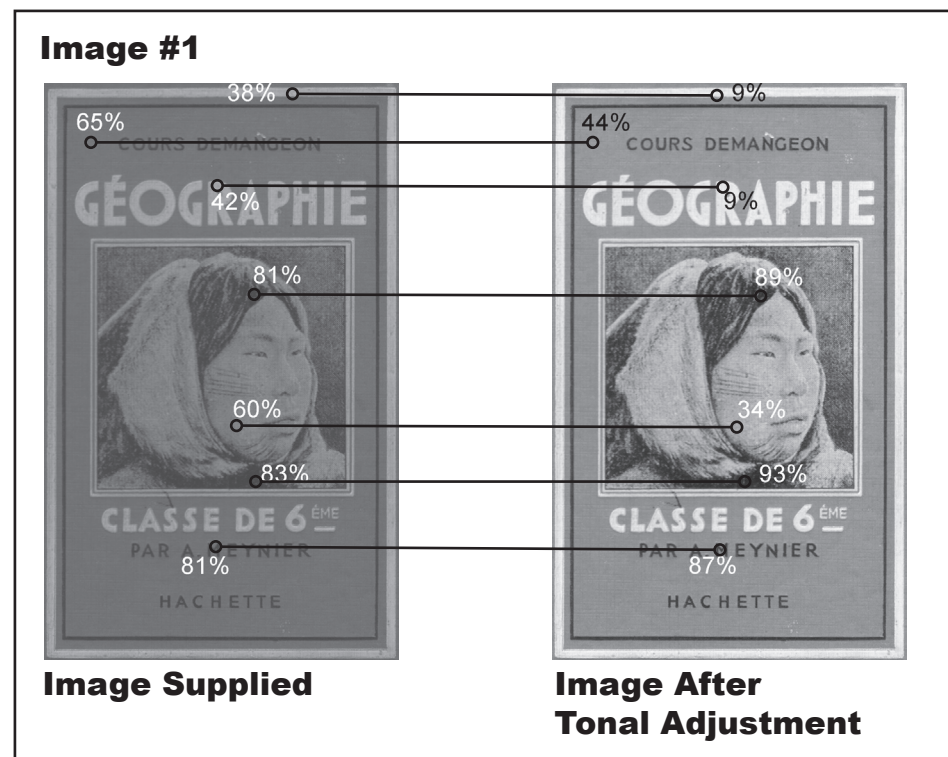# Grayscale Image Review

For Suppliers

creation date:
DW 10/30/18

Grayscale Image Review

The examples in this document represent three images as they were supplied to Sheridan PA for the publication (left image) and what tonal adjustment should have been applied to optimize the images for press (right image). Each image has the grayscale tonal values for the dot percentage represented in the areas of the image when we received the image and after the image was optimized.

Adjustment of images for print with good tonal reproduction on press should be done using an application like Adobe Photoshop. This application allows a trained user to adjust the values in an image to the specifications required for print. Images that have less tonal range will print with a flatter result and will not have normal contrast from white areas in the image to the darker black areas in the image. The image examples (Images 1-3) were opened in Photoshop and tonal curves were adjusted to move the highlight (0-15%), midtone (50%) and shadow (75-100%) areas of the image to the dot percentages that would reproduce the image correctly on press. The press dot gain and loss was also factored into the tonal adjustment in the images.

Image #1

Image Supplied — 38%, 65%, 42%, 81%, 60%, 83%, 81%

Image After Tonal Adjustment — 9%, 44%, 9%, 89%, 34%, 93%, 87%

Image Supplied

Image After Tonal Adjustment

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An image that will be printed on press should have the tonal range set for the highlight, mid-tone and shadows to the specifications of the press.

Highlight Setting

Areas in the image that should represent bright white or a specular sun spot (see image #3) should be set as a 0% in these areas. It should be realized that an area set in an image with a 0% dot will be the bright white of the paper. Areas that are set as a 0% specular are usually related to a sunburst or reflection of bright light.

Images that do not contain a specular highlight are not usually set with a 0% in the light areas of the image. Typically white in an image is set to a 2-3% in order to have some minimal dot in the image. This is especially important when an image edge needs to be retained by applying a dot percentage. Usually a 5% dot is used for this purpose.
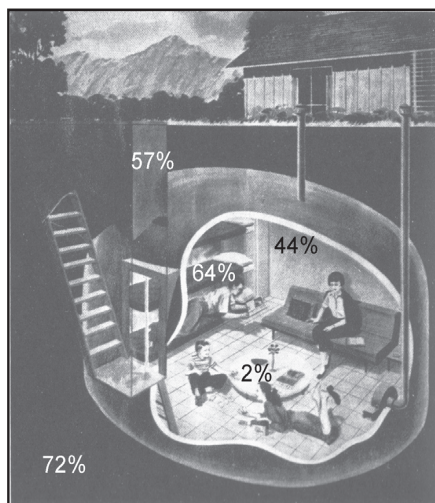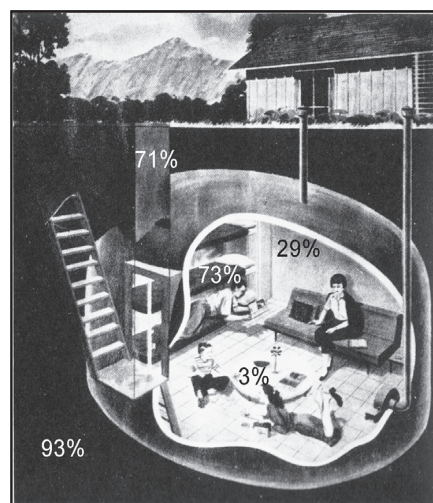
Image #2

Image Supplied

Image After Tonal Adjustment

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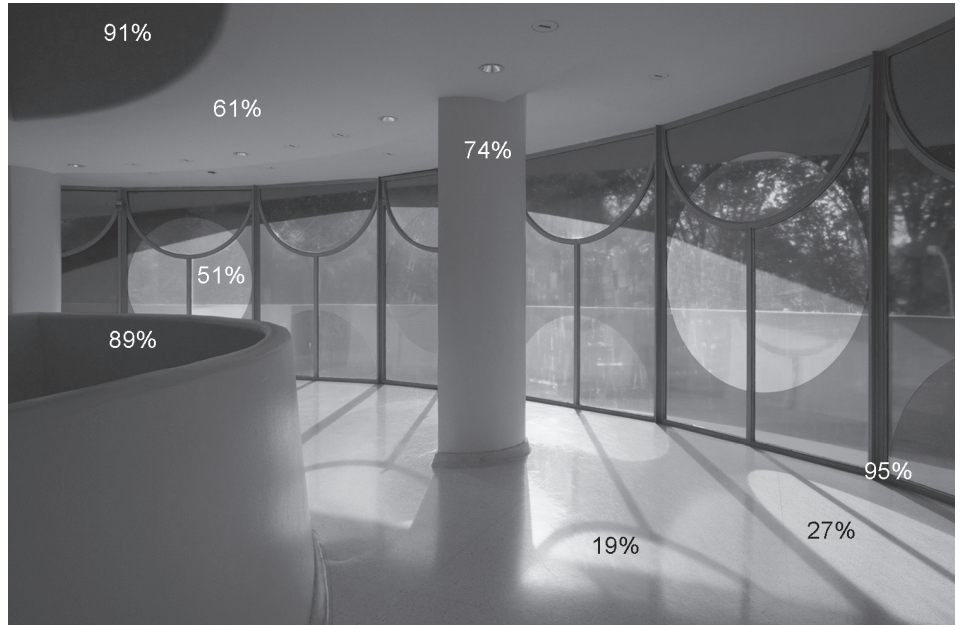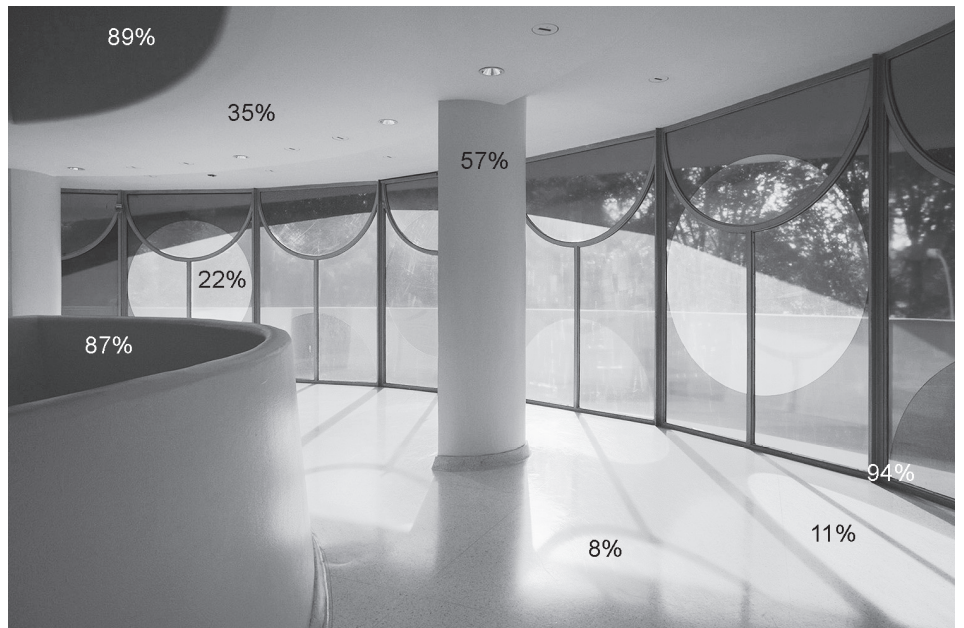
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Image #3

Image Supplied
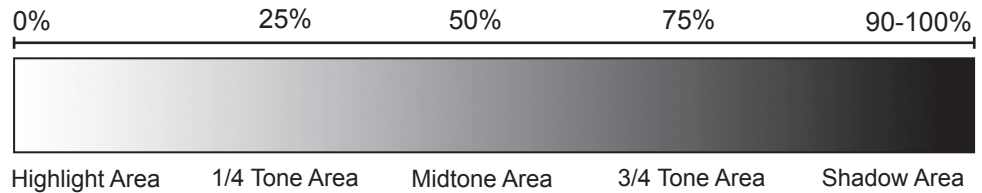

**Image After
Tonal Adjustment**

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Grayscale Dot Tonal Range

0%	25%	50%	75%	90-100%

Highlight Area | 1/4 Tone Area | Midtone Area | 3/4 Tone Area | Shadow Area

Midtone Setting

The midtone of the image (range from 40-60%) is an area that is affected the most by the dot gain of the press. Press dot gain is the amount of growth of the printed dot on paper due to the ink spreading on the paper from natural ink absorption into the paper and also from the impression of the ink from the press cylinder. A simple example of this would be what happens when you write on paper with a marker with liquid ink. The liquid will absorb into the paper and also spread out to some degree. This also happens on the press to a lesser degree but one that is measurable. The midtone area is adjusted so that any area in the image that should represent a 50% dot should be adjusted to approximately 42% to allow for the dot of ink when printed to grow to the 50% dot it should be on press. This happens in all areas of tonal range in the image but is more visually perceptible in the midtone area.

Shadow Setting

The shadow areas of a grayscale image are also affected by dot gain. Areas of an image that are set to a 95% dot will reproduce on press as a 100% black due to dot gain. Because this is expected shadow ar- eas in an image should not be set to a percentage over 95% unless a 100% black is expected in that area of the image. In order to reproduce detail that may be in the shadow of an image it is important to make a decision of what is important in the image, the detail or a more contrasty image reproduction with dark shadows.

1/4 Tone and 3/4 Tone Setting

The areas of an image around the 25% (1/4 tone) and 75% (3/4 tone) are affected by the adjustment of the highlight, midtone and shadow areas. The 1/4 and 3/4 tone areas should be adjusted minimally after setting the highlight, midtone and shadow range in the image. The 3/4 tone area of an image should be adjusted to the expectation of the intended viewer depending on what is more important in the final printed image, detail or contrast.

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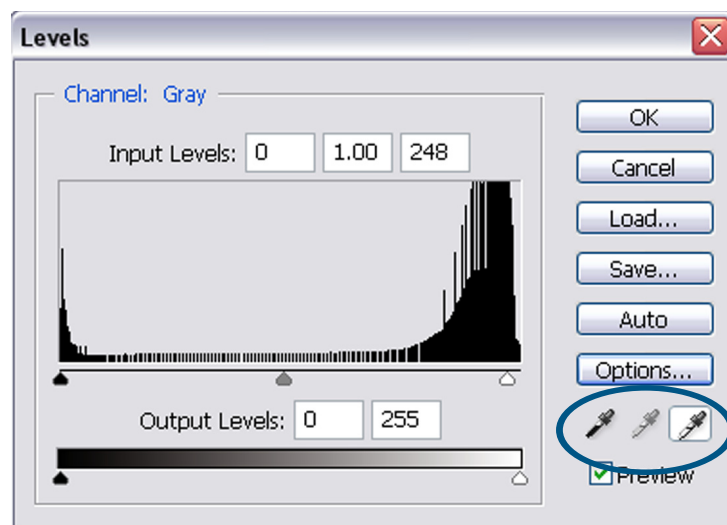
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Using Photoshop Curve Adjustment for Tonal Correction

The most commonly used image adjustment software used in the printing and publishing Industry is Adobe Photoshop. This software application gives the user the ability to adjust images for grayscale reproduction as well as color. Grayscale image adjustment can be accomplished in multiple ways determined by the training and ability of the user to understand each option for adjusting the image. Automatic adjustments in Photoshop Image adjustments (auto levels, auto contrast) will usually give the user a decent result that would be minimally useful as compared to an image that has nothing adjusted in it. *Using the auto adjustment settings in Photoshop is not recommended for all images and can result in adverse adjustment for images that do not contain good tonal range in the original.*

Photoshop Levels Adjustment

The Photoshop Levels adjustment (below) can be used to adjust grayscale images by setting the shadow midtone and highlight of an image with the eyedropper tools available (see circled tools in right hand corner of image). These tools set the highest value of dark tonal areas and the whitest white in the image along with specified begin and end points. To use this tool it is worthwhile to read the Photoshop manu- als and other supporting information on using Levels.


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Photoshop Curves Adjustment

The curves adjustment available in Photoshop (below) allows image adjustment using either the eyedropper tools for higlight, midtone and shadow settings or the tonal curve adjustment grid. The tonal curve grid allows the user to set input and output values for any tonal value in the image. In order to adjust the image that was supplied for the image in the example below the curve on the right was required. In order to adjust an image using the tonal curve grid some training and understanding of the tool may be required. Basic curve adjustment is accomplished by selecting the images original input value on the grid and adjusting it to the required output value on the grid. The grid is set up with all tonal areas from 0% to 100%. To adjust an image in the midtone (50% dot) to a 43% dot the user selects the line in the middle so that the 59% is the input and pulls the curve down to the output 43%. This can also be done for any dot percentage in the image. Example 0% Input to Output 3%, 99% input to 95% output.
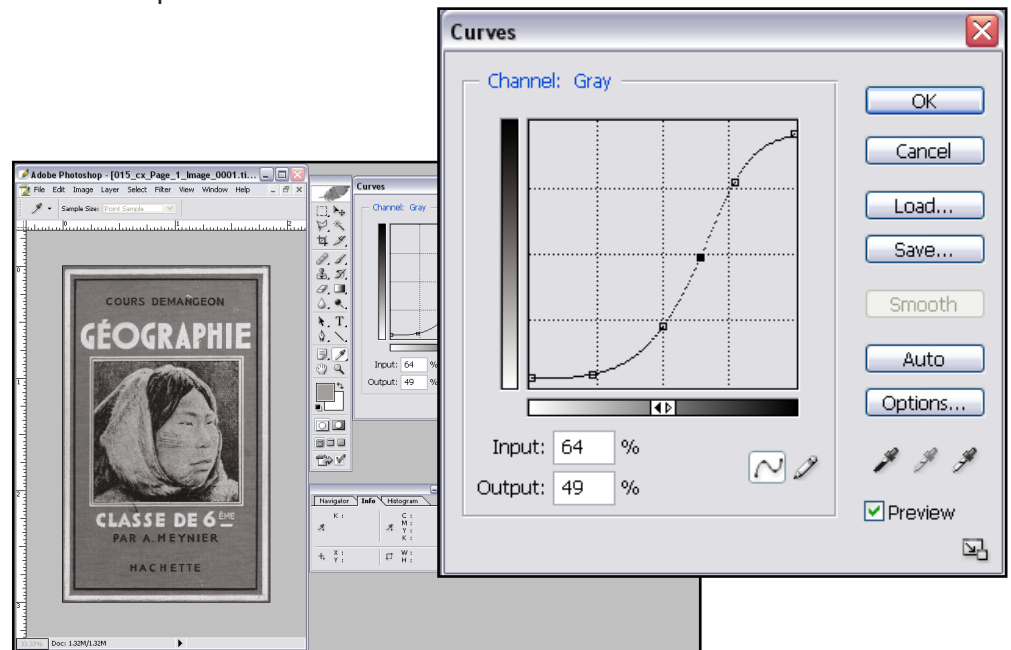
Review

All grayscale images that are provided to Sheridan PA for print should be evaluated for correct tonal range and be corrected to allow for the best tonal reproduction of the image when it is printed. In order to correct the images an understanding of the tools to accomplish tonal correction and the specifications that are required for press reproduction are needed.

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