

Photo-documentation of Light-Sensitive Photographs

Jiuan-Jiuan Chen

Analog photographs were created through their light sensitivity during the process of making. Some processes result in good light stability and some remain sensitive to light. In particular, experimental photographs made in the early development of the history of photography or the beginning of each well-established process might be questionable in regards to their lightfastness. It is always the best policy to take the most cautious approach with photographs of unknown processes—minimizing the light exposure and away from adverse environmental factors.

It is also important to have visual and written records about the condition of these questionable photographs. Particularly if a photograph fades or darkens, accurate graphic records will be extremely helpful to evaluate the change.

Concerns

Photo-documentation of extremely light sensitive materials is not regularly performed because of the concern of image changes due to light exposure during the course of documentation. If one chooses to use extremely low light level, the correct exposure can only be achieved with long exposure. The major problem comes not from the total lux-hour (or foot-candle-hour) issue but from the reciprocity failure causing incorrect color reproduction of each dye layer in the color positive or negative. Also, the color temperature of low light level might not be adequate for balanced color reproduction. Scanning is also problematic, not only the intensity of the light is very strong, the heat generated during the scanning process can also cause immediate alteration of the image of light sensitive materials. Indeed, the concern for light sensitive photographs has two folds: acquire accurate color reproduction under low light level and eliminate environmental damage, particularly heat, during the course of documentation.

There are several ways to control the intensity of the light and prevent temperature fluctuation happening to the objects. With digital tools available, it is possible now to correct the color temperature or the light spectrum with the white balance feature in every digital camera. Once the white balance is achieved, reciprocity failure is not an issue.

The light intensity can be controlled in different ways to achieve very low light level. One way is to use neutral density filters to cut down the intensity without changing the color temperature or the spectral distribution. The light can be as low as the camera can perform accurate white balance.

Currently, there are some choices for day-light balanced, full spectrum fluorescent light tubes without UV output. They generate very little heat when the light is on. If one has to use incandescent light sources, it is absolutely necessary to dissipate the heat generated by the incandescent light bulbs.

Practical Experience

The following is the approach for digital documentation based on the experience and equipment at the Conservation Department, George Eastman House. It is a guide, not a standard, for that no strenuous tests have been performed to determine the safe light exposure. Also, each photograph is different, a light level is fine with one experimental photograph might be too strong for another one.

It cannot be emphasized enough that handling the object in low light level requires even more attention. The photographs should be covered away from light exposure at all time except the time for exposure. One should plan in advance how the documentation session will proceed from one step to another step.

Steps of Setting Up and Photographing

1. Set up the light source for normal illumination.
2. Install neutral density filters between the object and the light source to cut

down the intensity. The ambient light will be higher than the light falls on the object, which provides good visibility for human mobility. The intensity of light should be below 1.5 foot-candles, or even lower.

3. White-balance the light setting.
4. Test the exposure with a color checker (Gratag-Macbeth color checker is preferred). Check the RGB numbers to achieve high accuracy of color reproduction.
5. Take the exposure. Each graphic record should have the color-checker and relevant information within the documented image.
6. Check the RGB numbers for grey scale and color squares.
7. Save the files with an appropriate format



Robert Hunt, 1844, engeriatype, collection of George Eastman House. The image was taken under 1.2 foot-candle of Paterson Interfit Digilite, at f 8.0/ 4 sec exposure with Canon 20D camera.