The brick wall project

The human eye has a dynamic range of 14 stops (pg 21 Bloch, 2010) but digital SLR cameras can only capture about 5 usable stops of light. By using variable shutter speeds to capture a series of photographs at evenly spaced exposure intervals, ranging from the completely underexposed to the completely overexposed, we can create an image that blends all of these exposures together to maximise the dynamic range in the image. This tonemapped image can display a much larger set of tonal values that goes beyond what the human eye can see. The tonemapped image, however, also incorporates and exaggerates the lens and camera artifacts. The image sharpness can vary greatly between different apertures of the same lens. Image quality also varies significantly across different makes and models of camera lenses and can introduce issues such as chromatic aberrations, distortion, vignetting and softening.

This project comprises of a series of photographs of a brick wall taken under overcast, diffuse, natural lighting conditions using three different 50 mm lenses on the same full frame Canon 5D Mark III camera body at apertures of f/1.8, f/2.8, f/4, f/5.6, f/8, f/11 and f/16. Seven bracketed exposures have been photographed at each of these apertures for each lens respectively. The camera is mounted on a tripod and placed so that the lens surface is parallel to the brick wall. The wall, being a two-dimensional plane, remains well within the depth of field even at wider apertures. The bracketed exposures are then tonemapped in Adobe Lightroom and Photomatix, using default values to eliminate bias, in order to create a tonemapped image for each sequence. The resulting tonemapped images, along with the corresponding exposure brackets are displayed in this exhibition.

The purpose of this project is to examine how different lenses contribute in shaping the final tonemapped image. The intention here is not to compare different lenses and apertures in terms of image quality, but to catalog, and visually demonstrate, the effect using a certain lens at a specific aperture has on individual exposures, as well as the final tonemapped image.

References:

Bloch, C. (2010). *The HDRI Handbook: high dynamic range imaging for photographers and CG artists*. O'Reilly.

About the author:

Rehan is doing a practice-led PhD based on his landscape photography practice in which he is exploring means of best practice in acquisition and production workflow for tonemapped landscape photographs.