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Why DSLRs aren't ideal for capturing artwork – part 1

Reasons why types of camera should matter to printmaking artists!

As an artist, you should know how your images will be captured.

A preface: Before I get waist deep into this subject, I just want to say that there will be some advanced topics covered in this article, and there may be terminology presented here that a lot of people will be unfamiliar with. So, if you find yourself confused, please bear with me; I'll also simply the ideas that are important. If you're interested in having your artwork scanned or imaged, with the idea that you will want prints later on, I promise this information will help you in your search for a capture / print provider, whether you use Studio 52 or someone else. — Brian



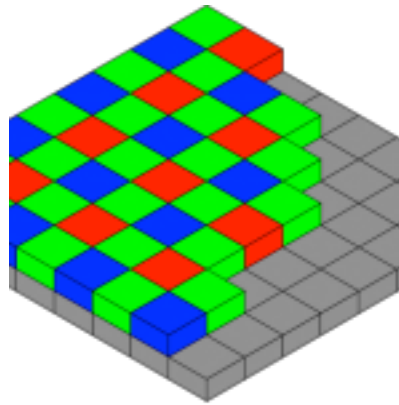
Digital SLR Camera

Modern Digital SLR (single lens reflex) cameras (or DSLR, for short) are amazing pieces of technology, and they're getting better and better at a break-neck pace. They truly can do a lot of things very well; from landscape photography to portraits, to high-intensity sports, fashion, journalism, and even in your face Macro photography—professional photographers amaze us with spectacular images created with these sophisticated machines.

However they often fall short for the purposes of art reproduction.

While it's true that you can take a reasonably high quality photograph of your art pieces with a professional-level DSLR (Digital Single Lens Reflex) camera, there are several problems a printmaker will encounter when it comes to using these images for printing:

1. DSLR cameras simply don't have enough resolution for most pieces.
2. Your "professional" photographer probably doesn't understand a lot of things about photographing art pieces
3. He also probably doesn't know the ins and outs of camera and workflow color calibration.
4. DSLR cameras have relatively limited dynamic range, and utilize tone curves not designed for art capture.



In this article we'll concentrate

on problem #1:

Consumer grade "instant capture" cameras, (even the top of the line \$8000+ Canon and Nikon DSLRs which every photographer lusts after) use a *Bayer Array sensor* (shown above) to capture an image. A Bayer Array is a combination of very tiny, individual electronic sensors which are sensitive to Red Green and Blue wavelengths of light. Each sensor is sensitive to only one color of light, so to create evenly-toned images, millions upon millions of these little sensors arranged on such a grid. They work together, along with some pretty sophisticated algorithms to create an image. With few exceptions, this type of sensor is the heart of virtually every modern camera out there—from your cell phone's camera to high end professional cameras.

As a consequence, even though the best of these cameras might have 25+ million raw pixels—i.e. the total number of individual Red Green and Blue "pixels" which comprise the sensor... Unfortunately, only a fraction of total RGB data recorded when the shutter is pressed! A software process called demosaicing, (or reconstruction) is performed on the raw data, and gaps in the color information are interpolated. *In other words, the camera's software uses neighboring pixels to guess what the missing pixel should look like.*

Because of this, a DSLR's actual total color resolution drops significantly (**up to 33%**), when forming an RGB image, due to gaps caused by the arrangement of the sensors. Even the highest resolution DSLR camera (the 24.6MP Sony A900) on the market as of this writing (February 7 2012) will only cover ~8.5-9 megapixels for each color. The rest is in effect guessed at by a computer program.

The truth is, this is not a significant problem for most uses, because the software is very good at making these guesses for most types of photo. The camera optimized for people and landscapes, and most images a photographer will take in his/her lifetime don't actually need all that much detail; you see, photographers

often desire parts of an image to be out of focus to achieve their desired aesthetic! These types of images are very easy for the demosaicing software to guess at, and make it look very good.

For a photographer specializing in art reproduction, however, total resolution is very significant. We want maximum edge-to-edge focus, as much detail as we can possibly gather—the sharper the better.

A digital scanning back such as our very own 100+ Megapixel BetterLight model (*up to **216 Megapixels** if you count them the same way as DLSR makers*) uses a *tri-linear* scanning sensor. By default, complete RGB data is collected for each and every pixel, therefore the camera does not have to guess at the missing data to produce a usable color image. This gives our fine art captures exceptional resolution for every color.

Bottom line: not only is our camera significantly higher in resolution from the start, there is no software trickery on the back end to cause artifacts later on.

BARRY'S NOTE: The Imagery Group has been using a **BetterLight** scanning back for their 4x5 view camera since 1998. Ours is Studio 52s big brother, measured at **384 Megapixels**. Additionally Imagery uses **North Light 900 watt HID copy lights**, especially made for fine art reproduction. I don't believe there is another fine art reproduction studio with our combination of equipment and experience.