A tale of two cameras
by Malcolm McElvaney

This is a tale comparing a Sony A-6000 and the camera on a Samsung Galaxy A03s that I have, the smartphone camera being the most recent one of the two because I reluctantly got a cell phone after avoiding the need for one for quite a while. It is for the camera I will use it but I approach it from an unique perspective as I try to make it do what I can with the dedicated camera I know so well. The short answer in regards to where do I fit in the process is I can feel like I'm part of the process with that smartphone camera as well. That is important to me as the photographer to not feel left out and simply rely on the software to take the picture for me. Neither camera can be compared to each other as equally capable but as tools used in digital photography they can be broken down to a common system; therefore, understand what digital photography is and you have a foundation of where a camera fits in and what it can achieve.

I started a rough draft on 06/03/2022 for this article but loose thoughts and ideas come together as they please, when they do the time spent on that stage is worth it. Three ideas that I what to expand upon will hopefully help present a bigger picture I realized exist.

- Either form follows function or function follows form – The camera body I feel so comfortable using can also take the form of a large touch sensitive screen in a thin case.
- A digital workflow or pipeline is part of photography going beyond the optical input contributed by the lens and sensor, this aspect is just as important in creating the final image.
- The basics, even if hidden, of photography are still being used. Learning about some of these fundamentals may not be needed based on the camera used but there is value in knowing more about the hidden details.

I didn't start out with such a vast scope in mind from a quest to see what a new tool could do and how to push the limits of it. Before I actually acquired a smartphone camera to get hands on practice with I researched the subject in hopes of learning more about it in theory. The best find was the term *computational photography* as it relates to what the post processing either in camera or on a computer can do. This goes deep into the world of math but that is what happens when a file is imported to be enhanced or "fixed in post" essentially from a fragment of digitally converted optical input. Inspiration comes from many places for me but photography isn't a monolithic subject rather it is an art form fragmented into many aspects coming together in many different ways; yet, seen in a monolithic way by many. These fragments may be called digital photography, phonography, computational photography, or some unknown term I need to find but there is common ground and overlap to be connected and used to understand
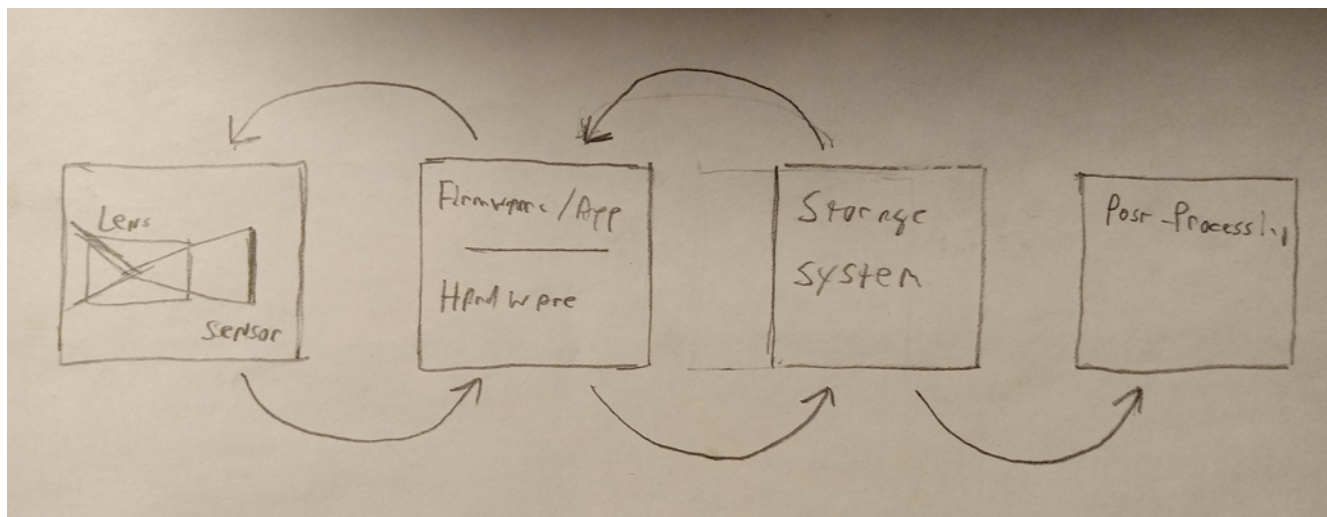
the other ones.

Form vs function the optical elements

My Sony A-6000 uses an e-mount to attach lenses that are compatible with it to a somewhat small body type called a pen camera, the lens can be larger and heavier than the camera body and sensor contained within it. The lens is functionally very important here so the form it attaches to can't be that much smaller. Function dictates the form and for this trade off I get a better set of optics and larger sensor in a large camera body.

The camera in the Samsung Galaxy A03s is the opposite condition, as the lens and sensor must fit within a thin area and use up as little precious space as possible. Here function is chasing form at the cost of a fixed focal length, f/stop, and a much smaller sensor. This trade off isn't as bad as it seems because a more powerful processor is used to control that optical system so more computing power can be applied to overcome a necessary constraint. This isn't to say my other camera is under powered but designed to do the basics of collecting the needed files and perform functions available because it is one step of a larger process.

A little bit of a side note but form and function are also part of an aesthetic and how we interact with a device. I started out with a stand alone camera but not the DSLR I use now, it was an early model so very none standard but the familiar shape I prefer was in most of the cameras progressing from the point and shoot camera, bridge camera, and in the DSLRs I learned on. Having used the smartphone now the overall shape is very unfamiliar when using it with a camera app. Using the touch screen is still bit awkward but it is matter of time to learn this new gadget. I come from one mind set going into a new one and that makes a difference, so those who come from using a smartphone as their first device likely will have a similar mind set and what to expected, so with that in mind how would they adapt to my style of photography. The transition goes both ways and when considering the task of teaching photography to others this might be something to consider.

Digital workflow

That initial press of the button will open a shutter to let light in to the sensor or send a signal to reset the sensor and capture a specific exposure, the start of the workflow has been started. The light being projected on the sensor builds up electrical charges on each pixel to build the tonal values we use; however, it isn't digital until an analog to digital conversion is done. Color from the pattern of filters in front of sensor is interpolated together and the recognizable image we expect is created.

All of this work up to this point has been done with the firmware (aka software or app) and the processor running it. The hardware and software will be tailored to the needs of the device but just like the optical elements are key to capturing the scene these play a key role in how fast and complex the manipulation of the data being stored away can be handled. The transformation of the real into the surreal or even an enhanced version of what could have been, all courtesy of the this hardware. The smartphone camera has a much more powerful processor than my other camera but it also has the ability to do in a second what I could do on the computer after downloading the files manually. This added power allows the constraints imposed by the fixed optics to be overcome but also to explore a more playful side no reality can compare to. It is the speed of this transformation that is amazing, I still prefer my Sony and the work I put into the image at a more leisurely pace.

The last square of the illustration is labeled post processing because I typically download the images into a computer and then run Gimp to do my work but the cameras job is done and it is put away. On the smartphone the file is stored internally and now being used as a computer and not a camera other apps can be run to work those files on the smartphone itself.

Form influences interactivity

Top left - Sony A-6000
Right - Samsung Galaxy A03s
using Open Camera app.

I alluded to form altering how we interact with our camera and as you can see by this example there is a difference, lets break down.

The Sony A-6000 has the larger lens and sensor you can see but it is that physical presence I can hold I prefer, the dials and buttons have mapped themselves in my mind so I can navigate it easily. There are options I can only change by menus as seen (barely) in the picture and with the extra steps might contribute to how quickly I change some factors. One of the interesting observations coming from using the smartphone camera is how I adjust to light levels, it was after using the sliders pictured top, right to adjust ISO and shutter speed that I realized ISO tends to stay in one place when using the DSLR. While I can adjust f/stop and shutter speed via dials and accomplish an adjustment the ISO is hidden in the menus. It got me thinking about form and function being part of this and why I don't adjust the ISO more often.

The smartphone camera is touch screen based so perhaps more intuitive and flexible but the sliding of my finger and other gestures seem foreign to me at this early stage of learning the new gadget. Form in this case, as a computer, allows me to run Open Camera instead of the default camera app so I do get a more functional camera and a few options the other camera doesn't have. If fully embraced I could do my post processing and sharing on this device too but I'm happy accessing the phone like a drive using my computer instead to produce the final image.

In conclusion

It is 06/11/2022 as I finish this draft of the article but a tale of two cameras has been told so to add in any more wouldn't make any sense. I have included the originals draft introduction because it does help complete the story and maybe help fill in a detail or two from another perspective.

06/03/2022 – I begin this piece with a dated entry because it will be a work in progress as I work out some ideas, so the tale of two cameras is about my Sony A-6000 (DSLR) and a new Samsung galaxy A03s (smartphone camera) I have finally acquired. In many ways they are complete opposites because one relies more heavily on the optics for the highest quality and the other has a fixed optical system due to physical constraints yet the computational side is embraced to produce amazing results. Both types of cameras in terms of being a system, while different, produce a final image that stands alone to be enjoyed; however, as a tool both require a mindset as a photographer (i.e. artist) to make them work well. My mindset is key here as this is actually my first cell phone, yes some of us are slower on embracing the modern age, so I approach this as finally needing the phone part reluctantly but mainly getting a new camera in the process. Being a new camera and actually being able to play with it I'm seeing where the research done before fits in and where those assumptions don't lead and what can be achieved as I explore the tool more thoroughly.

The complexity of what is in my head will need time to organize but when I first started photography I had a simple point and shoot camera I just used to document and never once did the limits or wanting to be in more control of the process ever cross my mind. The images and videos were downloaded and stored away as is being compiled for mindless reasons as I explored and the desire to share new discoveries drove the process. The artistic side in me slowly came about in time as I upgraded my gear and took more pictures so the technical aspects and need for that control possible took time to develop as my journey into one type of camera system went on. The stand alone camera and the process of working on the final image on my computer allows me to fit myself into the art form and give me a sense of being the artist doing the work. It has been a while since I have used a simple point and shoot camera so likely my current mindset wouldn't be quite compatible with it either, the cell phone camera has much in common with a point and shoot camera but so much more built into the processing applied after the optical image is captured. This new camera has distinct limits but options to apply what I do now should I accept the challenge of learning this new tool.

Also I mentioned three ideas initially but haven't covered knowing the basics of photography even if hidden from you. I have material on my website trying to explain this and others have done so as well, I will link to the resources for you to explore should that be something you find interesting. They say the best camera to use is the one you have on you, I would add that every camera is good for something it is just finding out what it is good for.

- #20 – How was that created - (https://www.malcolmmcelvaney.com/written/written.html#20) – Follow the link to download the PDF file. I explain the terminology in more depth here.

- Photo Phone, Compact, APS-C, Full Frame: Learn the Language of Crop Factors - (https://learn.zoner.com/photo-phone-aps-c-full-frame-crop-factors/)

- Cell Phone Photography 101 - (https://dragonflywoman.files.wordpress.com/2014/03/cell-phone-photography-101-for-web1.pdf) – As of the date written it goes over the limits and how adjust to them.

- Resolution, aliasing and light loss - why we love Bryce Bayer's baby anyway - (https://www.dpreview.com/articles/3560214217/resolution-aliasing-and-light-loss-why-we-love-bryce-bayers-baby-anyway) – explains how color is created from the sensors input.