A photograph of a lighthouse on a rocky island. The lighthouse is white with a red roof and a red door. It is surrounded by several other buildings, including a white house with a red roof and a small red shed. The island is rocky and has some sparse vegetation. The ocean is blue with white foam from the waves crashing against the rocks in the foreground. The sky is a deep blue with some light clouds.

ADVANCED DIGITAL LANDSCAPE PHOTOGRAPHY

Carl Heilman II
with Greta Heilman-Cornell



LEX



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I L E X

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As a child, I enjoyed playing around with a box camera, but didn't have a clue that I would grow up to harbor a deep passion for photography. This passion was born when I moved to the Adirondack Mountains of upstate New York in 1973 and fell in love with the wildness of the remote, snow-covered mountaintops. At that time I made the decision to start taking pictures that would not only capture a sense of the place, but also the feelings of what it was like to be there.

Several months later I bought a used Minolta SRT 101 with a 50 mm lens, and some Kodachrome 64 slide film, and headed off into the mountains to photograph the amazing diversity of nature. I gradually expanded my collection of lenses and filters, bought a tripod, and began my study of landscape photography; learning about the nuances of weather, natural light, and composition. The equipment served me well for several years of exploring in the mountains and provided a great introduction to photography.

I started thinking about moving to digital capture in the early 1990s when the new technology began to appear regularly in photo magazines. Photography was becoming a greater part of my livelihood, but after looking at the options and comparing them to the potential of digital imaging, I decided to wait. Although I was anxious to make the switch to digital, I wasn't satisfied that the relatively early camera files equalled the digital scans I could get from fine-grained 35 mm film. Indeed, it wasn't until the spring of 2007 that I bought my first digital SLR; a Nikon D200. Here, at last, was a camera that gave me more flexibility than a 35 mm SLR and provided me with better image detail than my favorite Velvia 100 film.

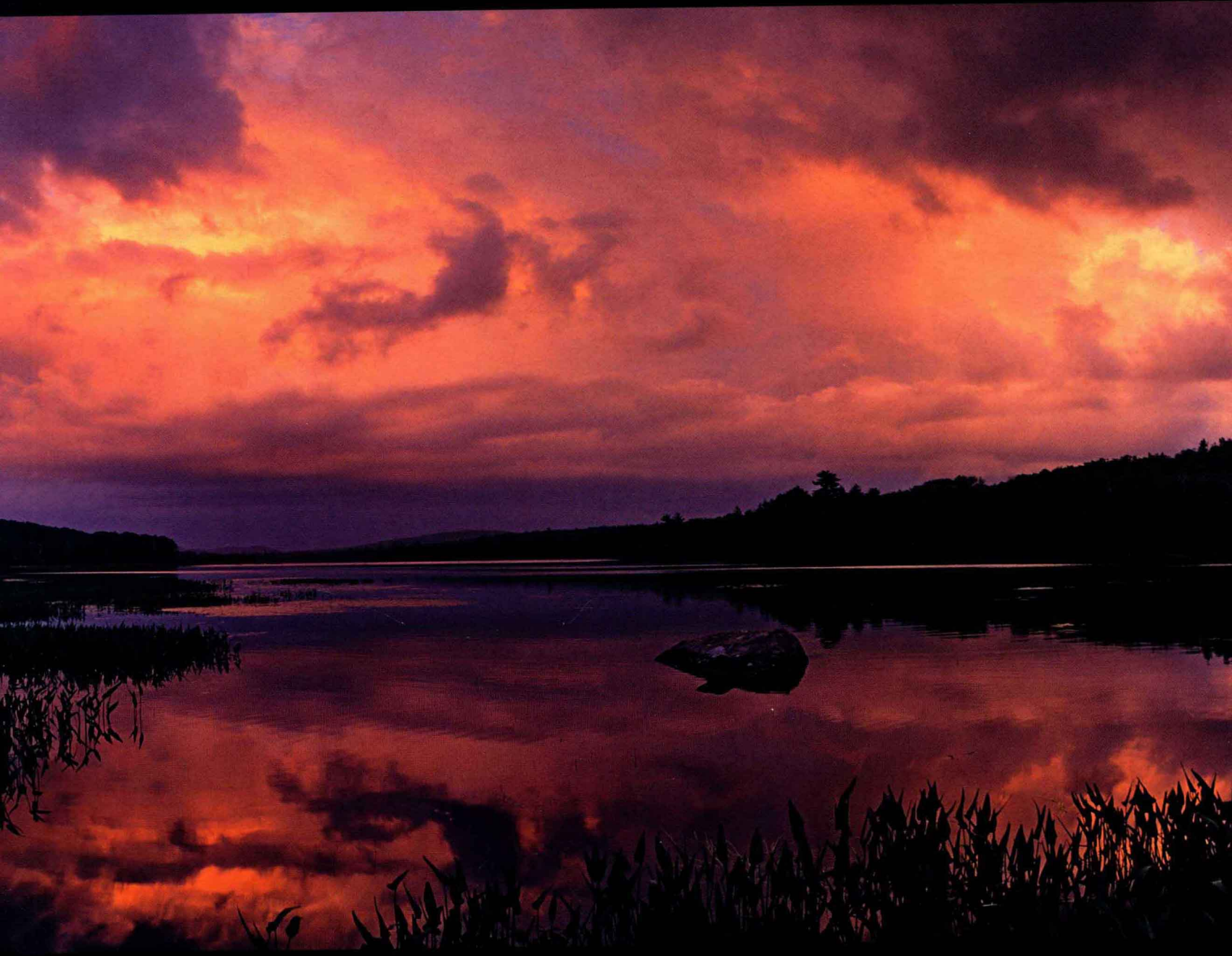
The change was revolutionary. Through my years of photography experience, changes in equipment and techniques have produced marked differences in my photography—working with a new lens, learning about hyperfocal settings, and experimenting with different filters all had significant benefits. But the move from film to digital eclipsed everything that had come before. Now, if I can imagine an image, I can create it.

While the switch from analog to digital capture is often a challenge, most of the basic photography techniques and principles are as true today as they were when photographers used glass plates. The physical principles of lenses have not changed, the rules of composition are the same, and landscape photography is still all about light. However, to excel at landscape work, you have to realize that it is not just about being in the right place at the right time. It's also about knowing what makes the right conditions occur, and understanding the mechanics of photography enough to be able to capture the detail and nuances of light at the best possible moment.

Most important, though, is to just go out and play. There is always something that can be photographed, and always a way to make it appear unique and special in whatever light you have. Dewitt Jones' philosophy is "believing is seeing"—you need to believe in yourself, your abilities, and your imagination before you can see the unique imagery that is there. With digital camera technology, if you can believe it is possible, you will see it. And if you can see it, you can capture and create it.

Carl E. Heilman









1: EQUIPMENT & TECHNIQUES

Today's high-tech digital cameras have so many features that they can do almost everything except compose an image for you. All of the technological improvements in metering, focusing, and processing make capturing a high-quality image more efficient than it has ever been, but with this sophistication comes complication. Camera manuals now contain staggering amounts of information that can make it hard to understand the built-in features, or, more specifically, the features you actually need. Digital cameras may have the capability to capture images like never before, but if a person doesn't understand the basic principles involved, obtaining a quality photograph will still be hit-or-miss.

However, despite today's digital cameras being so advanced, most of the creative photography techniques found in this book are based solely on working with adjustments in the size of the aperture and the choice of shutter speed. Having complete control of the photographic process depends on understanding the principles involved in these two features, the interplay between them, and how their dynamics change when using different focal length lenses. Being able to apply these principles when using the additional automated features found in today's high-tech cameras will help you create high-quality photographs by choice instead of by chance.

IMAGE FORMATS & CAMERA DESIGNS



*Pemaquid Point Lighthouse,
Bristol, ME*

Digital imaging has numerous advantages over film. Total flexibility over the ISO sensitivity, Live View, image enhancement features, instant gratification, a shortened learning curve, and the freedom to experiment without the cost constraints are just a few of the benefits you can enjoy. At the same time, there are plenty of digital camera choices that let photographers approach landscape photography in a way that best suits their own style. Typically, the best quality sensors and greatest variety of technical options are found in the most recent, higher-priced models (especially those that feature full-frame sensors), but technology is always trickling down from top-of-the-line professional cameras to the consumer models and, as you will see, the smaller format sensors are excellent for photographers who are serious about landscapes.

There are several image formats that can be used for digital landscapes, ranging from large format (4 x 5 inch) down to the “designed for digital” Four Thirds standard. While numerous point-and-shoot cameras offer many comparable control options in a small package, they lack one of the more important camera features for landscape photography—interchangeable lenses—and many don’t offer really wide-angle focal lengths. Also, the small sensors in point-and-shoot cameras cannot capture the same dynamic range and detail found in images taken on cameras with larger sensors.

The different formats are integrated into three basic digital camera designs: digital SLR (single lens reflex) cameras, rangefinder cameras (where the viewfinder is offset from the lens), and view cameras (traditional bellows-type cameras). The

most popular camera style by far—and the one I will focus on in this book—is the digital SLR. A major advantage of an SLR camera is that the image coming through the lens is reflected onto a mirror and into the pentaprism of the viewfinder so the photographer views the scene as the camera sees it. Digital SLRs also have a wide array of interchangeable lenses, making them a portable, lightweight, and very versatile design.

While they are just as portable as digital SLRs, rangefinder cameras have one significant drawback—the viewfinder is offset from the camera lens. This means it only approximates the same field of view the lens is seeing, and the greatest disadvantage of this rangefinder viewing system for landscape photography is parallax. When focusing at a distance this isn’t necessarily a problem, but when you are working with elements that are close to the lens, the parallax effect can be significant, and the viewfinder composition will not always be an exact match to what the lens is seeing.

Finally, there are the view cameras—traditional, bellows-type, large format cameras that were once incredibly popular with landscape photographers looking to achieve the highest quality results on film. As well as working with physically large film that delivers ultra fine-grained results, these cameras feature tilt and shift perspective controls that offer additional creative options when it comes to composing landscape photographs and controlling depth of field. Several manufacturers make digital backs for this type of camera, but the cost is often prohibitively expensive.



VIEW CAMERA

Large format view cameras were incredibly popular with landscape photographers looking to produce the highest quality images on film.



DIGITAL SLR CAMERA

The digital SLR is now the most popular, and versatile, camera for landscape photography, especially smaller format cameras in a traditional 35 mm SLR style.



f/8 1/160 SEC
ISO 400 FL 400mm

Taken with a 400 mm
telephoto lens.
Adirondack Park, NY

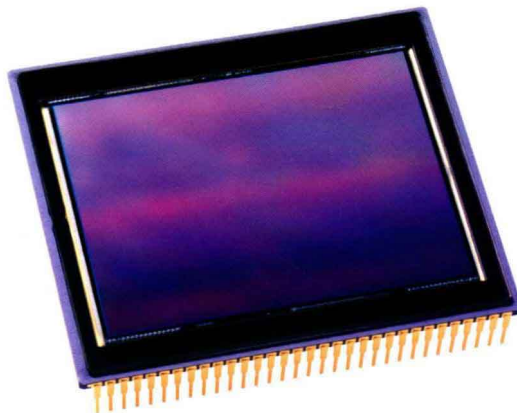
IMAGE SENSORS

The heart of a digital SLR is its sensor, and a variety of formats are available. The most popular and affordable cameras use sensors that range in size from full frame, 24 x 36 mm, sensors through APS-sized sensors (based around a 16.7 x 25 mm sensor size), to the Four Thirds standard that has a sensor measuring 21.63 mm across the diagonal. A recent addition to the Four Thirds specification is Micro Four Thirds, which uses the same sensor size, but replaces the pentaprism viewing system of an SLR with an electronic viewfinder and/or Live View LCD screen for viewing the image being photographed. This allows Micro Four Thirds cameras to be made physically smaller, while retaining the image quality of the Four Thirds sensor.

With current sensor and lens technology, some people would argue that a sharp, 12-megapixel digital image shot on a full-frame sensor has the same detail in an enlarged print as traditional medium format film. With this kind of quality available, choosing equipment has more to do with how you like to photograph than it does with the camera you are using.

The number of pixels, however, is not the only consideration. The size of the pixels (or, more accurately, the size of the photosites on the sensor that generates the pixel), also plays an important part in determining image quality. Pixel size, or pixel “pitch,” is measured in microns and is determined by two things—the surface area of the sensor and the number of pixels on it. The greater the pixel pitch, the higher the photon capacity of each individual photosite, and higher photon capacity means a broader dynamic range (the range of stops from light to dark that can be recorded), and a higher signal-to-noise ratio (which reduces the amount of non-image-forming noise in the final image).

Before the advent of digital imaging I shot 35 mm Kodachrome and Fuji Velvia for decades, both widely regarded as the highest quality 35 mm films. Now, I work with APS format digital SLR cameras. Although not full-frame, I can still produce large, 24 x 36 inch (60 x 90 cm) prints from 12 megapixel Raw files for exhibitions and print sales—the same print sizes I would make from film. These are printed from 200 ppi (pixels per inch) files, rather than the more common 300 ppi files, but still exhibit excellent sharpness, clarity, and detail, even when viewed only inches away from the print.



SENSOR

The sensor in your camera is the “heart” of a digital SLR. Although resolution is often seen as the measure of quality, the pixel pitch is just as important, perhaps more so.

Sensor Sizes

There are three common sensor sizes used in digital SLRs: Full frame, APS, and Four Thirds. Their relative sizes are shown below:



FULL FRAME



APS



FOUR THIRDS

The size of the pixels (pixel pitch) is a significant factor in determining image quality, and larger pixels will generally produce better images. However, it is a question of compromise. A large sensor with fewer pixels may have larger pixels with better light-gathering properties, but a lower number of pixels means that images will more quickly appear pixellated when they are enlarged.



1/20 1/13 SEC
ISO 400 FL 18mm

Pixels are the basic building blocks of a digital image, and the more pixels you have, the larger you can print or display your images without them appearing “jagged” or pixellated. However, other factors also affect image quality, such as the size of the pixels.

Acadia National Park, ME



Image Quality Checklist

- Choose a camera with at least a 10 megapixel sensor.
- The number of pixels helps determine the amount of image detail.
- Larger pixels capture a greater dynamic range and produce images with less digital noise.
- Digital SLR cameras with interchangeable lenses and a multitude of shooting options offer the greatest flexibility for landscape photographers.