ID Magazine | Sharp Shooter

A mongrel camera built from remnants produces astonishing detail
By Tom Vanderbilt, June 2004

On vacation in Colorado several years ago, the New York photographer Clifford Ross was captivated by the sight of a mountain near the town of Carbondale. He wanted to take a tourist snapshot to preserve the experience of being there. He snapped the scene several times and later digitally fused the frames together using Photoshop to create what he thought was a clever arresting panorama.

But when he showed the photograph to friends and family, no one was impressed. Ross had the feeling the photograph failed to convey what his memory harbored. "There was no detail, no atmosphere," he says. A few months later, he returned to Mount Sopris with a 4x5 camera. "Very quickly I realized there was not enough reality here," so he went back again with an 8x10 – twice the size if the negative, twice the information contained and presumably twice the reality. "I was starting to realize this was a very interesting endeavor, to try to capture as much of the world as possible," he says. He was coming up against the technological forth wall of photography; as he puts it, "what compromises information between what's out there and what's being presented to the viewer."

Around the same time, Ross ran across and article about some optical engineers who had taken an old Fairchild Instruments aerial camera designed for cartographic and military applications and converted it into something approaching a standard view camera. The scientists were primarily concerned with the accuracy of the image captured, but Ross was convinced that if a Fairchild could be retrofitted with the rudimentary elements of a view camera – the ground glass, the focusing mechanisms – he could achieve the ultimate artistic goal: to give people a new way of looking at the world.

Eventually, he arranged a meeting with the engineers, who explained their process. He then began trolling eBay and haunting far-flung photo storehouses, assembling the nuts and bolts of the old Fairchild systems. He called Kodak to make sure the specialized film was still available (it was), got a company that makes decorative etched glass for pizza parlors to create a ground glass, and found a machinist in upstate New York who could fashion an aluminum housing to withstand the considerable weight of the ultrasensitive camera with no vibration. "If there was a 2,000th of an inch deflection because of the weight," Ross says, "all the other things we had achieved would have been ruined." He also created an unusual 25X magnification system for examining the image, commissioned a craftsman in Montana to make a set of bellows, located a tripod that would hold the weighty apparatus in a stable manner, and troubled the Swiss company Sinar for obscure view-camera parts.

The result is the R1, a curious hybrid camera that employs antique parts but is already, in resolution terms, years ahead of digital photography. (Ross recently obtained a number of patents on the R1, essentially for the way the elements are put together to form a high-resolution photography system.) Weighing some 30 pounds, the R1 shoots 9x18 inch film in spools as long as 400 feet.

Ross's 76x135-inch print of Mount Sopris, the first complete image made with the R1 camera, took up to 2.6 gigabytes after beind scanned froma a 9x18 inch negative. According to Michael Hawlry, director of special projects at MIT's Media Lab, the image is considered "the most techcically perfect mural-sized photograph ever."

The camera assembled, Ross and a team of assistants went back to Colorado and photographed the mountain, the result, or at least a prototype, occupies the entirety of a rather large studio wall. It is a mesmerizing image, less for its actual content than for the strange effects it plays on perception: There is a totalizing immersiveness, a pulsing tactility that arrests the eye at every angle. "The goal with these images is to create a completely believable space, wherever you choose to look," Ross says as we stand before the print. "If you come up to the image you are not treated to a lot of blurry dye planes, you are seeing the treads on a tractor that is three-quarters of a mile away," He points to some faint gray veins at the top of the mountain. "Those are footpaths on the top – that's seven miles away. And this is nothing –this is only 20 to 30– percent of the image that I have available to show you."

The darkroom is where the real work of photography takes place for Ross; and for the R1, the printing process was as much a technological epic as assembling the camera itself. The sheer size of the scan some 2.6 gigabytes - was like nothing the photo labs had seen (by comparison, NASA according to Ross, unveiled 1.2 gigabyte images of Earth that it claimed were the highest resolution photographs ever made). "We crashed two labs within three days," he says. Ross, who admits to being a relative computer neophyte, found himself on the phone with software designers as they puzzled out how to handle the images that had so challenged their systems.

The R1 has attracted the interest of Michael Hawley, director of special projects at MIT's Media Lab and creator of the world's largest book, a color photography study of Bhutan (see I.D., May 2004). "Clifford has quite simply made the most technically perfect mural-size photograph ever," Hawley says. "It does change your thinking about what a picture can be, and it certainly raises

the bar well beyond the reach of digital systems in the next several years. It isn't just the camera, but Clifford's exacting pursuit of excellence in imaging from start to finish – the scene, the lens, the camera, the film, the processing, the scanning and the digital filtering, the megasize fine-art printing - he's polished these pieces from top to bottom, and the result is stunning." Ross has also had discussions with everyone from museum curators to advertising companies, and while he maintains that his interest is artistic, there's no denying the range of potential applications the R1 portends – any place where more visual "intimacy," as Ross terms it, might be desired.

Ross with his R1 camera on a plain in Carbondale, Colorado, shooting Mount Sopris, June 2003.

When he's not out shooting, Ross is working with experts on the computer side, and he hopes to take the R1 – which in its current form would be the rough equivalent of a 900-megapixel digital camera – up to 5.9 gigs. "I do think that they're the highest resolution landscape photographs ever make of a large scale," Ross says, adding that he doesn't know what the CIA might have. The numbers, while seductive, are merely a means to an end. "If it was half the resolution but made a good piece of art, I'd be a happy guy," he says. In May, the Sonnabend gallery in Manhattan will display a single image taken with the R1. Until then, Ross will be living in secrecy with his obsession – his mountain – peering into the deepest depths of the pixel, trying to bring not only the Colorado landscape)"including the wind and the smell") to his audience but also a new parameter of sensation.

"There's a huge amount of whimsy in all this" he says. "It's all a little bit mad. I'm not just trying to take a big postcard picture. There's an art content I'm after. It's just that on this particular adventure, I'm past where people have been before."