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Eye candy

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Patrick J. Saine turns retinal photographs into art that looks back at the viewer
By Anita Dennis

Patrick J. Saine has an eye for detail. It has been nurtured and cultivated from childhood, when his father bought him a 35mm Zeiss Ikon Contaflex for him to take to Austria on a high-school exchange program. After studying biology in college, he continued to pursue what he calls avant-garde photography, but when his wife became pregnant she decided he needed a real job. So Saine was lucky enough to marry his avocation and his education by becoming an ophthalmic photographer, capturing images of patients' retinas for a living.

But his foray into digital ophthalmic "quilts," as he calls them, began quite by accident.

"Blood vessels branch like grass and flowers and trees."

- Patrick J. Saine

Three years ago, he was performing a routine fluorescein angiogram: After injecting dye into a patient's arm, he captured several dozen photographs of the retinal blood vessels to see where the dye traveled. Then Saine used medical digital imaging software to create a four-up composite of key frames so that doctors could study what might be causing the diseased eye. It's a procedure he's performed hundreds of times, but this time Saine accidentally clicked the mouse and saw a 16-square grid of retinas staring back at him on-screen.

The images hovered in his mind's eye, and the next day, just for fun, Saine imported the images into Adobe Photoshop and "stitched" them together to make a quilt. "It started as a lark," Saine recalls. "Then when I showed a few people and they said, 'This is totally cool,' I decided this was a vein I should explore."

So far, Saine has created 15 of his quilts. A 3x5-foot photographic print of one of them, *Fundus Flag*, hangs in the waiting room of the ophthalmic clinic at the Dartmouth-Hitchcock Medical Center in Lebanon, New Hampshire, where he is director of ophthalmic photography. A collection of others, printed on an Iris inkjet and mostly 15x15 inches, will be on display at the Contempo Gallery in St. Augustine, Florida, during April.

Adobe products used:
Adobe® Photoshop®

"The depth of detail and color is gorgeous," Saine says of the Iris prints. "These images need to be big enough to have the richness of detail show through."

The appeal of his artwork, Saine says, is that it works on multiple levels. "Good art has to be very simple and very complex at one time," he says. "That's why this works: It's natural and man-made at the same time. You've got a lot of yin-yang going on."

Viewers respond to his quilts because they see a natural order - "Blood vessels branch like grass and flowers and trees," he says - whether or not they know it's a retina. "If they find out they may say, 'Yuck, it's an eyeball,' but then they say, 'Hey, it's a cool picture,' so it works."

Look the other way

Another yin-yang aspect of the quilts is that they're photographs that look at the viewer as the viewer looks at the art. "The ultimate self-referential act is to photograph eyes," Saine observes. "The retinal images that make up these photographs are hidden from our normal view of the world, and contrary to the rigorous documentation I perform on the job, my personal images have always been reflections of self. I've always photographed from the inside out."

Most of Saine's quilts start with 1 MB black-and-white squares, but when several are stitched together and color is added in Adobe Photoshop, finished pieces balloon up to 350 MB. The process takes him up to 40 hours per quilt. (Luckily, he has an understanding with his wife that he can work on his quilts as late as he wants on Wednesday nights.)

Saine captures about 1,000 retinal images a week, so how does he choose which ones to use in his artwork? "Some images just achieve a clarity that I notice," he says. "When you photograph the world you're looking for situations or patterns that you can appreciate. This is the same process. I look at these images daily, and some of them jump out as special."

After setting those special images aside, Saine draws a sketch to help him visualize his final image, then begins working with Photoshop's layers, filters, and transformation tools to stitch the pieces together. Colorizing comes last, after the image's overall structure is established.

Saine is amazed by what people see in his quilts, and he tries to explain how he views the world and captures it in photography. "I used to say that if you have a good camera and live right then everything will go your way," he says. "That's what happens when you get into the flow. There's so much to see in everything, it's amazing. Understanding reality truly depends on your ability to perceive."

San Francisco-based freelance writer Anita Dennis has highly symmetrical retinas.

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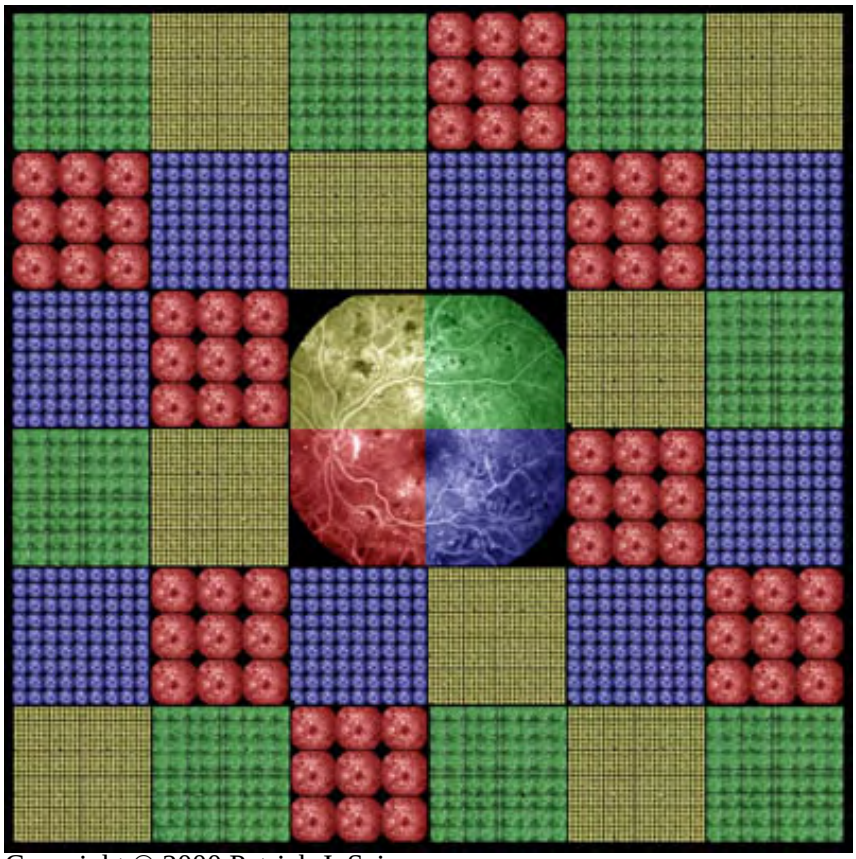

Seed Quilt is Saine's first work of digital ophthalmic art created in Adobe Photoshop. In his words, "The techniques I've used aren't advanced. It's the originality of the idea which drives the image."

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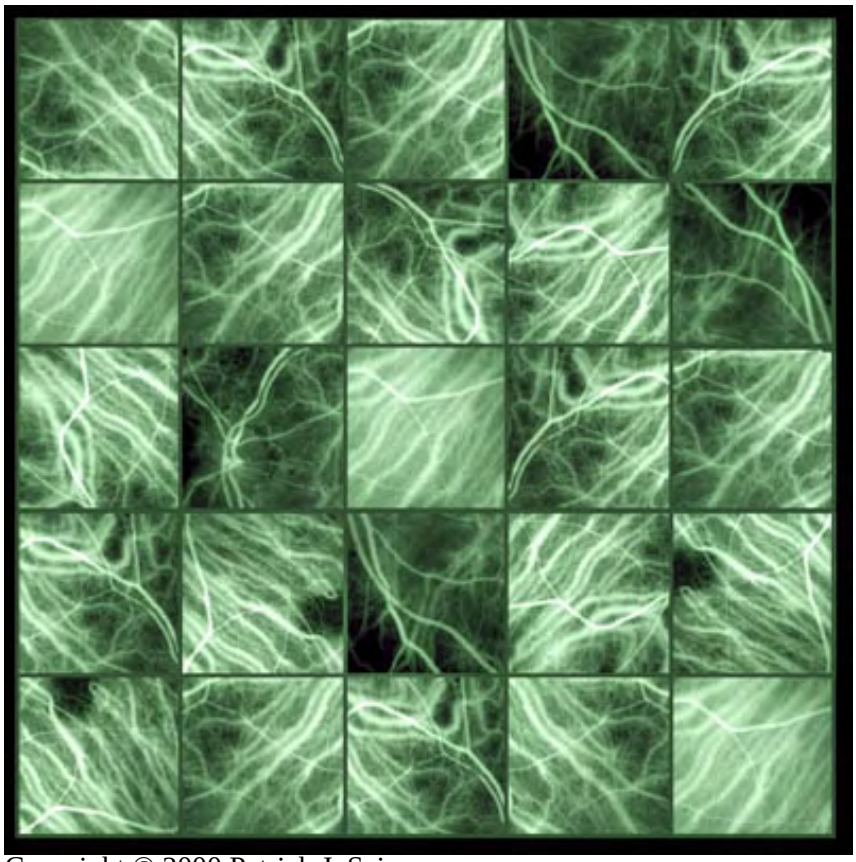

Saine was inspired to create *Choroidal Marble* because he lives in New Hampshire, the Granite State, which is next to Vermont, the Green Mountain state. Four choroidal images are rotated and repeated to make up the 5-x-5-square quilt.

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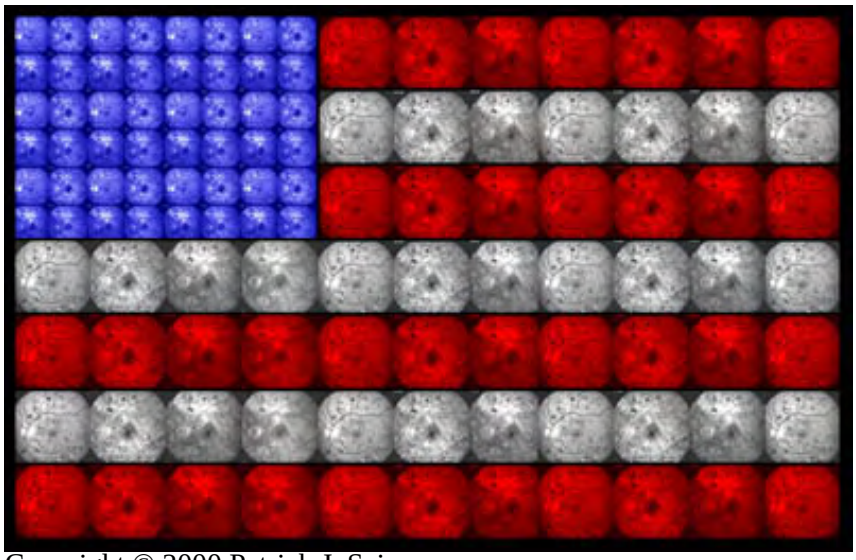

Fundus Flag intentionally has fewer stripes and "stars" than a true U.S. flag. Saine also deliberately played with three-dimensionality in this image: The red stripes appear to jump forward of the white stripes, especially when viewed on-screen.

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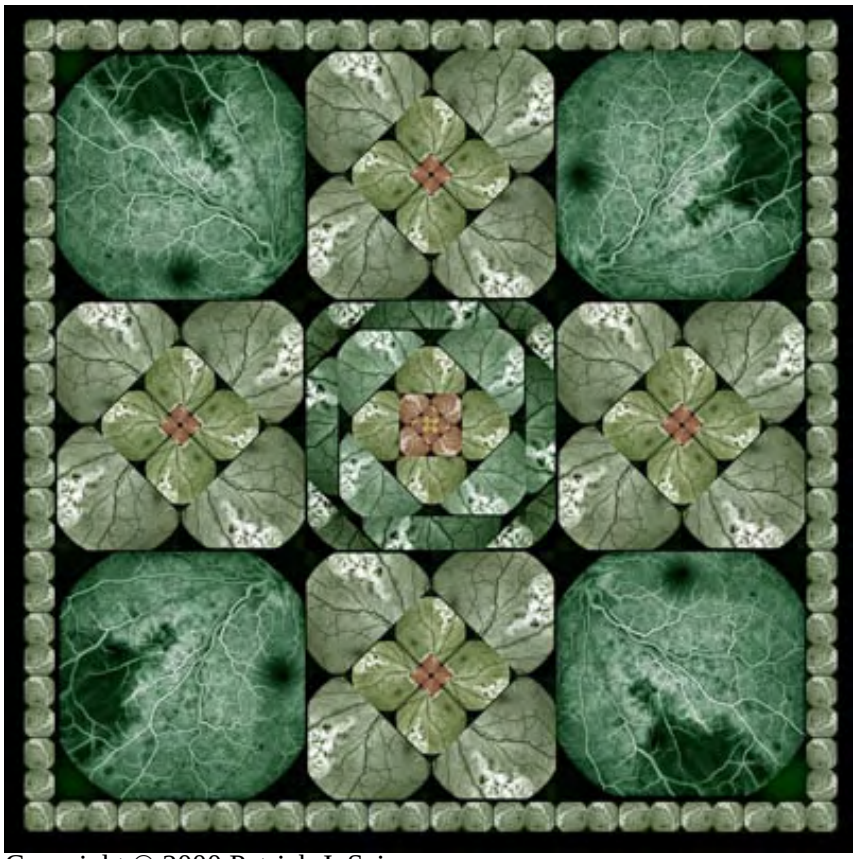

Continuing to find creative new patterns for his quilts, Saine came up with the idea for *Fundus Flower* after visiting the world's largest kaleidoscope in the Catskill Mountains. He created the image in the dead of a Northeastern winter, while he was daydreaming about warm climates and desert flowers.

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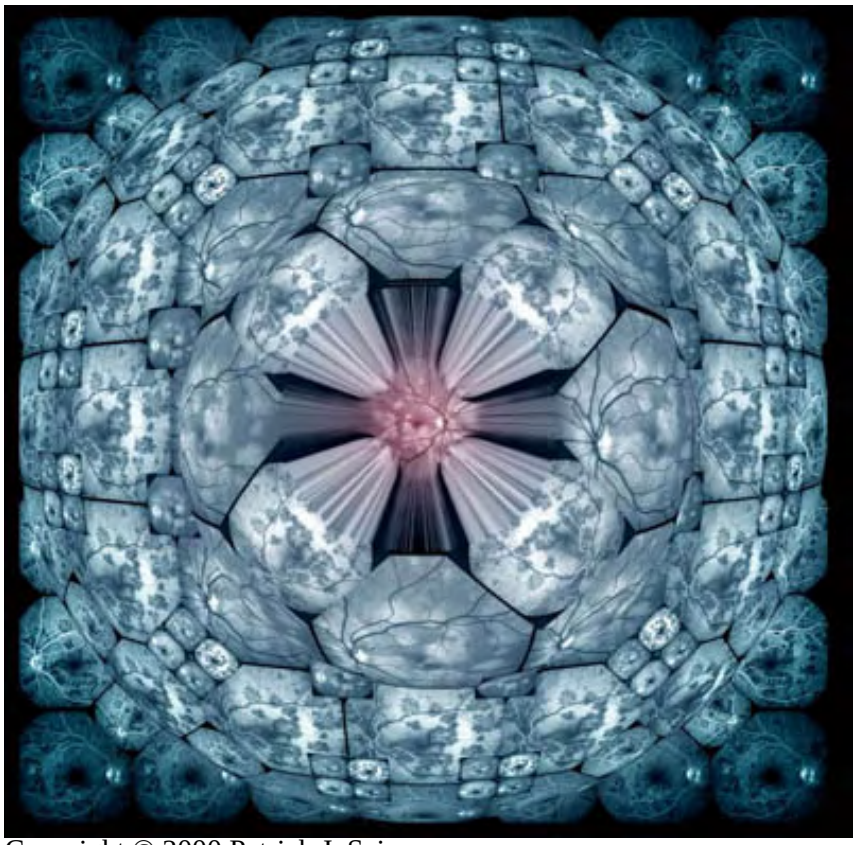

Saine used Adobe Photoshop's Spherize distortion filter to create dimension in *Retina Blues*, which was inspired by the work of MC Escher. The image curves toward the viewer, Saine notes, while the retina actually curves like a bowl.

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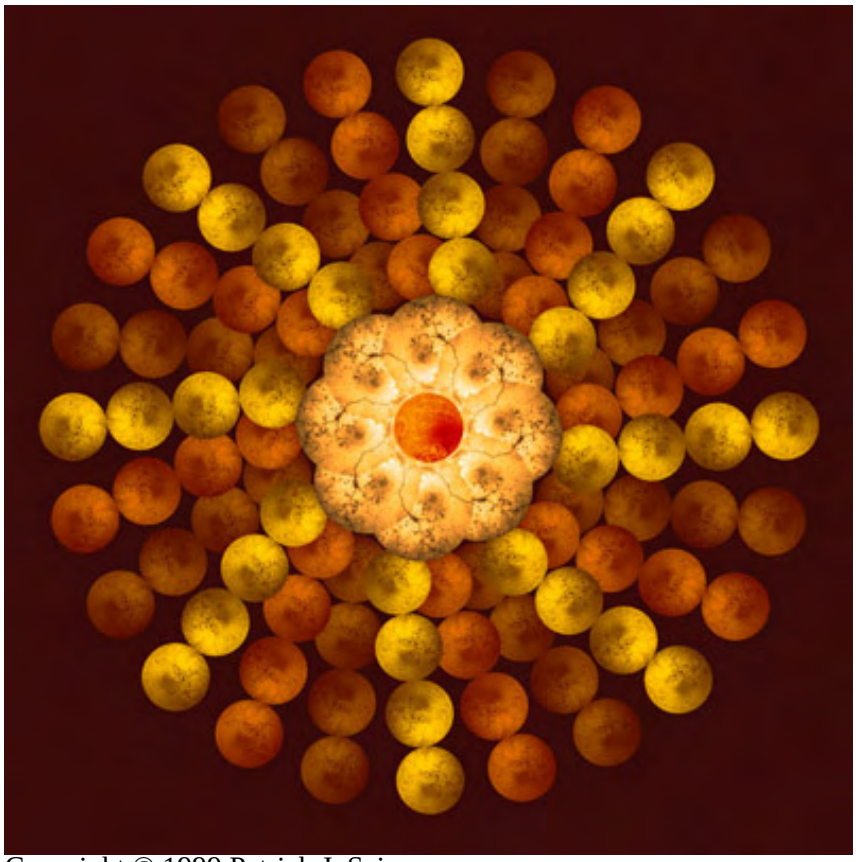

Ra Retina was inspired by the Egyptian sun god Ra. This patient, Saine also notes, had a classical, symmetrical face. With the aid of magnification, you can see that the blood vessels join up perfectly in the center of the retina as well.

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