Prolific fractal artist Michael Sussna has a varied and interdisciplinary academic background. He did his first computer programming as a high school senior in 1967, by a Teletype connection to Dartmouth College in New Hampshire. In college, he pursued a philosophy degree, concentrating on mysticism and consciousness. Then while toiling away as a software developer in the 1970s, he earned his MS in computer science. In the 1980s he studied in the interdisciplinary program of cognitive science within the computer science department at the University of California, San Diego.

“This was a return home for me,” he explained. “I could now legitimately study subjects such as philosophy, cognitive science, psychology, linguistics, neuroscience, and other areas concerned with thought, perception, meaning, and so on, though I was officially a computer science student. I incorporated these interests into my doctoral research in information retrieval by taking a semantics-based approach, and developed a methodology for working with semantic distance in topic networks that is still cited.”

As an artist, he is entirely self-taught. He grew up with a mother who painted and he had an extensive collection of art books long before he had an interest in creating art. “Combining that pursuit with my long-standing love for science fiction and the fantastic, my comfort with mathematics and computing, and my deep appreciation for the abstract, the dive into fractal art creation was a natural step for me,” he said. Although he’s been incredibly prolific over the years, the end is nowhere in sight.

“I’m just getting started,” he said.

The Centiolier and Doodads project

Complex Compass (the cover image) as well as Gyroscorpions (see Figure 1) and Tile Torrent (see Figure 2) are three out of thousands of images created as part of the Centiolier and Doodads project. Moon over Morocco (see Figure 3) predates that project, but all four images were generated in Frederik Slijkerman’s Ultrafractal (UF) program.

Sussna explained that the Centiolier and Doodads project began when Kathy McElroy posted an image called Metal Spiral to the UF mailing list. The image combined two types of UF formulas, a base formula and an outside coloring formula. Sussna described it this way: “A base formula generates numbers based on which fractal algorithm it embodies and which region of the imaginary number plane or landscape lies inside the scene. A coloring formula takes those numbers and turns them into colors, point by point in the scene.” McElroy provided Susan Chambliss’ Centolier as her base formula and Dennis Magar’s Doodads as her outside coloring formula.

He added that vamping on the whole thing is a perfect example of how he balances free-form exploration and deliberate design. “I am often asked if I start an image with a conscious concept of what I will end up with,” he explained. “The answer is yes and no. Most of my images are snapshots from a series of explorations, discrete moments in a continuous flow of image creation and manipulation. These flows generally begin from scratch, with no starting concept, and evolve from there serendipitously. But once I’ve found a set of shapes or forms that I want to work with further, I apply techniques that I have developed for surface patterning, coloring, and lighting. So for any given image, I might have an idea of what I want to arrive at, yet for the seed of the
flow I probably had no clear vision of what I would end up seeing. The Centiolier and Doodads project is a great example of this process.”

He also said that his extension and exploration of a particular technique such as this often stretches out over a long period of time. “[Sometimes] I spend days, weeks, or even months mining the vein that the flow led me to. In this case I spent 16 months following what started as an innocent tangent!” Sussna’s entire gallery of artwork is available at http://sussna.com/images/cpg132/.

The aesthetic

Sussna says that it’s not always easy to create fractal art and there definitely has to be some sort of compositional aesthetic. “Not all parameter settings or numerical values give good or pleasing results,” he cautioned. “In fact, the overwhelming majority do not. The fractal artist patiently explores variations, seeking to home in on aesthetically advantageous outcomes. Once in a fruitful groove, there can be rich room for maneuvering. Veins of beauty can be mined.”

Since everybody under the sun seems to be exploring fractal art these days, I just had to ask Sussna what he thinks about it all. What is it about fractals that attracts so many artists? Is it nature? God? Self-similarity?

“I think there are a number of factors,” he answered. “One is the novelty of the results. This is indeed something new under the sun. Another is the complexity and seemingly endless variety of scenery. Related to that is the ability to explore some scenes in unending depth. This infinity is within reach, despite what we’ve been taught about the impossibility of comprehending infinity. And this leads for some to a spiritual experience, as we are directly apprehending something cosmic and powerful.”

Also, Sussna explained the Centiolier and Doodads project shows that a fractal artist can go quickly through artistic periods that would take a traditional artist a much longer time: “Whether significantly modifying one’s color palette or changing from a textural theme or motif that one has used extensively to another, perhaps quite different textural theme, or working with noticeably different underlying types of structures, a fractal artist can go through a series of styles and looks in a short period of time.”

And it doesn’t stop there: “Yet another side of this is how fractals allows us to model natural and organic phenomena, though at first they appear merely mathematical and relegated to some abstract region uninvolved in the real world. Yet some of us know that the abstract world is very much a part of the real world, despite its invisibility to the five senses. The sixth sense of intellect can perceive and work with the abstract just fine. That’s what it does.”

The interwoven future

Sussna said he’s working on a number of interwoven projects. Currently, he’s further experimenting with and augmenting the Centiolier and Doodads project. “Longer term, there’s no telling where my fractal travels will lead me,” Sussna explained. He said he would like to see his work established as fine art and he wants to see it on commercial products, like fabric, packaging, and even greeting cards or calendars. “People of all ages and backgrounds respond very positively to my work when I do public art events—it would be great to see the word spread on a grand scale. The hope is that it is of lasting value and not just a fad, which is where any ability I have to transform fractals into fine art will make a vital difference.”

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