Many moons ago, in January of 2006 to be exact, *IEEE Computer Graphics & Applications* profiled Dolores Kaufman in these very pages. Titled “A Space to Dream,” the story delved into Kaufman’s understanding of transmutation, an alchemical process of turning base metals into gold. In many aspects, her digital art features the transmutation of a seed image, a base artifact, into pristine abstractions. More often than not, the resulting image does not even remotely resemble the original seed image. Reconnecting with Kaufman proved to be even more transformational.

“Digital media is a great source of artistic alchemy, allowing me to transform ordinary objects into an extraordinary experience,” Kaufman explains. “While steering the process using a quantity of parameters, my main focus is on the hidden meanings and associations that begin to emerge. If I had to use one word to describe what I seek with my art, I would have to say that it is ‘essence.’”

Understanding Kaufman’s present and future work requires going back about 100 moons in the past. After trying a number of Photoshop filters and plug-ins, she settled on Kai’s Power Tools (KPT), the fortifying element she’s used ever since. KPT contains 24 tools for transmutation, with at least three of those tools enabling Kaufman to manipulate a large number of parameters toward an almost infinite amount of new, original images. She can steer the process however long she wants before arriving at the proverbial Aha! moment. In the beginning, she used KPT’s Hyper Tiling to great effect and enjoyed it so much that she still uses that particular tool to this day, relishing in the intricate effects it provides.

For example, *Off the Ground* in Figure 1 began with an old black-and-white photograph of a car in a parking lot sitting in front of a white brick wall. The shot is nondescript and plain-looking, desolate and stationary, but Kaufman transformed this parking lot *prima materia* into something colorful and birdlike, while retaining some of its original textures. She gave flight to an otherwise static scene.

Kaufman traveled this path for years, but as time unfolded she discovered another way to transmute seed images into more “golden” results. She discovered yet another alchemical process by placing physical artifacts and objects onto a flatbed scanner and then uploading the resulting collage into her computer.

An image from Kaufman’s “Fork & Spoon” series, titled *Figment #3* (see Figure 2), is made from a scan of a simple fork, spoon, and plate. The collage might recall Dada artist Kurt Schwitters, the confrontational pioneer of abstract junk collage, but in this case, the process is updated for the digital world. With *Figment #3*, once again the static is made fluid. Base material becomes golden.

“I like starting with ordinary, utilitarian objects or natural entities we tend not to see as art,” Kaufman explains. “What I seek in my explorations is an evocation of the mystery and
symbolism embedded in the seemingly mundane ephemera with which we share our lives.”

After years of using KPT to transmute scanned photos and objects into new digital images, Kaufman ultimately discovered fractals, progressing into KPT’s FraxPlorer, a fractal program that doesn’t need a seed image. From there she graduated to the Frax4D tool, with which she created the cover image, *Many Moons Ago*.

As the user manual explains, Frax4D features two modes. Cogiternion lets the user explore 3D fractal space by combining three parameters. The other mode, Quarternion, allows exploration of 4D fractal space, enabling the user to define a point with four parameters. In the latter case, the final 3D object is created by a 3D slice of a 4D fractal.

Kaufman didn’t stop there, however. She created *Many Moons Ago* by merging two Frax4D images together.

“After adjusting all the parameters provided, I returned the rendered images to Photoshop to complete the final image using layer styles, adjustment layers, and all the other Photoshop tools at my disposal, until my visualization was complete,” Kaufman explains.

**To the Moon and Back**

Speaking of moons, nothing could indicate a more astronomical future for Dolores Kaufman than an actual trip to the moon. Such a trip isn’t physically possible for her, but her artwork will soon be traveling 238,000 miles to the moon. Just recently, Kaufman received notice from Chris Robinson, curator of the Moon Arts Project (moonarts.org), that one of her NanoArt images, *Eye Sea* (see Figure 3), will be included in the MoonArk. This six-inch-tall capsule designed by the Moon Arts Group, a team of faculty, students, and alumni from Carnegie Mellon University working alongside independent artists and professionals, will contain elements representing all the arts and humanities (with works by a few hundred artists, composers, and writers) and most advanced sciences (engineering, technologies, and material science, including ongoing deep space radio-wave transmissions). The MoonArk will travel to the moon in competition for the Google Lunar X Prize.

*Eye Sea* was originally part of the NanoArt 21 project (www.nanoart21.org), organized by Cris Orfescu as an international online competition promoting NanoArt as a new discipline at the intersection of art and science. Various artists were provided with a nano seed image, *prima materia* with which to create their own interpretations on a molecular and atomic scale. Although many artists used the initial seed image as background material, Kaufman wanted to see what she could create using only the seed image and no other sources. As with the cover image, *Eye Sea* was created with KPT and Adobe Photoshop.

In the end, hidden connections tend to crystallize throughout the course of Kaufman’s life and work. For example, when the cover image (*Many Moons Ago*) was chosen for this issue, CG&A did not know that Figure 3, *Eye Sea*, was actually being sent to the moon. On a macro and micro level, even on a nanoscale, everything seems intimately connected.

“Art is primarily an experience, for both the artist and the observer,” Kaufman says. “It is a trip we take though our imagination into the past, to the present, and into the future. It’s a mind game, a puzzle, and an inquiry of ‘what ifs’ and ‘what elses.’ With art we can both lose ourselves and find ourselves in a world of infinite possibilities.”

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