ISSUE 19.1: **FEBRUARY/MARCH 2016**

DEPARTMENT

Artists of the Folding World

The members of Epic Origami take their work to, well, epic levels of intricacy

Story by **Brittany Moya del Pino**. Photos by **Elyse Butler Mallams.**

Shannon Nakaya tips a large plastic snack canister over her grandmother's kitchen table, and a fantastic menagerie tumbles out. A baby lionfish drops first, gold and bristled for defense, followed by a purple dragon and then a bearded bull moose, whose eight-point antlers snag for a second in the canister's mouth.

Nakaya frees them, then reaches into the narrow opening to retrieve a great white shark. She cradles it in her hands as she notes, "I'm about twenty hours into this piece of paper." The shark's form is now clear, but its jaw and belly remain unfinished; most of the 270 folds still needed to complete it will go into its teeth.

Nakaya, a veterinarian who lives in Kona, grew up

folding the origami most of us are familiar with: cranes, cranes and more cranes. A symbolic 1,001 of them went to her grandparents on their fiftieth wedding anniversary and still hang on their living room wall in Kaimukī; other flocks went to newlywed friends and relatives. But that traditional origami is far behind Nakaya now. Today she is a member of Epic Origami, a Big Island-based group of six elite folders who make origami that is robust and evocative, with textures, curves and anatomic details that make paper creatures seem ready to leap out of the folder's hands.

Epic Origami's six artists fashion pieces that push the boundaries of the craft far beyond tradition, like the red dragon folded by Shannon Nakaya seen above.

Last year Epic Origami members exhibited their work at the 'Imiloa Astronomy Center in Hilo. Inside the

center's enormous titanium-covered conical atrium, life-size Japanese cranes hung suspended from the ceiling overhead, each folded from a single three-foot-square sheet of white paper. That was just the beginning. The exhibit placed a special emphasis on Hawai'i fauna, and visitors could see, among other things, an origami he'e (octopus) and 'ōpe'ape'a (hoary bat). Nakaya had folded a life-size pua'a (wild pig), and a French member of Epic Origami, Julien Lozi, had created, out of handmade paper from France, an 'io (Hawaiian hawk) with feathered wings, spread talons and eyes that seemed to be searching for prey.

Nonnative animals in the exhibit included a giraffe, a zebra, penguins, even a pair of pink-eared bunnies, which were a favorite of Pāhoa's Claire Arakawa, who'd brought her 93-year-old mother to see the show. "I've never seen such creativity before," said Arakawa. "We've done origami since we were kids, but this is a level that's just awesome."

Origami stands alone among the paper-folding arts because of its simple rules: start with a square and fold it—no glue, no tape, no scissors. Where and when those rules developed is still a matter of debate: Some believe origami arose immediately following the invention of paper about two thousand years ago, but the

strongest evidence for what we think of as classic origami points to its parallel emergence in Japan and Europe sometime after the sixteenth century. There are clear descriptions of origami in Japanese poetry, textile designs and paintings; and in Germany baptismal certificates were folded in ornate ways that contain the essence of the art of origami.

Like most origami enthusiasts Nakaya, a veterinarian who lives in Kona, grew up folding a lot of paper cranes. But her craft has evolved greatly since then. Above, Nakaya holds her representation of an ʻalalā, or Hawaiian crow.

A renaissance began in the 1950s, when origami cognoscenti codified the pattern instructions that are widely used today. They published books full of new designs that embellished traditional origami and gave pictorial instructions that transcended spoken language:

dashed lines, dotted lines, curling arrows. They also claimed ownership for their designs, shaping the current etiquette that requires folders to acknowledge the original designer and even pay royalties. In the 1990s origami took another huge leap forward with the release of TreeMaker, a computer program capable of mapping the creases needed to reproduce the body structure and appendages of any creature, no matter how complex. TreeMaker was the brainchild of physicist and trailblazing origami maker Robert Lang; when Lang offered the program as a free download on his web site, the selection of patterns available to origami folders exploded; folders now have tens of thousands of options to choose from.

Lang is also a reminder that origami is not just decorative and whimsical, it's useful: He designed a folding telescope lens that could be packaged to fit inside a rocket and unfurl in space, with a final span of one hundred meters. Just as the abacus solves problems in arithmetic, origami can find the solution to quadratic, cubic and quartic equations in algebra; and biologists have used it to understand how vast molecules like DNA and proteins may be folded so carefully, so perfectly, into just the right shape. With the help of origami folds, researchers have designed stainless steel heart stents that can collapse and expand, and crash-test simulators have

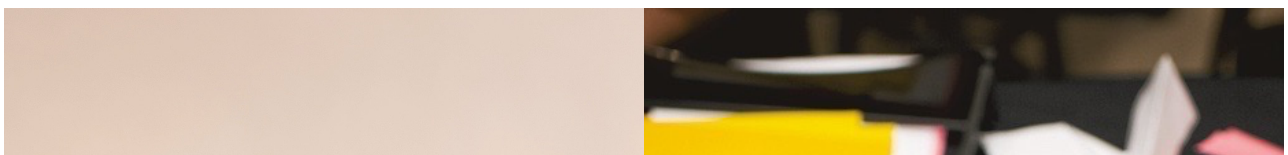
determined how to fold an airbag so it deploys safely.

Though Epic Origami is based on Hawai‘i Island, not all members live in the islands. *Manō, Shark on Wave* was created by Nguyên Hùng Cuòng, a member living in Vietnam who sends his sculptures to Hawai‘i by mail.

These days origami clubs can be found around the world. In Hawai‘i we have two: one on O‘ahu, one on Hawai‘i Island. The Honolulu club, a mix of adults and children, gathers once a month at the 99 Ranch Market food court in Salt Lake, where they share favorite origami books and work together. The Hawai‘i origami club, a similar mix of adults and children, meets at the public library in Waimea. Its organizer is a multimedia visual designer named Bonnie Cherni—who also happens to be the ringleader of Epic Origami.

Cherni, who lives and works in Waimea, has been folding origami for thirty years and still loves it—in addition to the origami club and Epic Origami, she teaches origami workshops at local elementary schools. But it is Epic Origami that really challenges her. The six members of the group fold complex patterns and choose unconventional techniques that add majesty to the final sculptures. They might begin with tissue-like paper that can hold hundreds of tight folds or use thick paper with heft and texture that resembles wrinkly skin or scales. They might wet the paper first so that it bends into shape instead of creasing. Or—right on the fringes—they might forgo paper altogether and switch to materials that allow them to make creatures on the same scale as their living counterparts.

Cherni, for example, sometimes folds with metal mesh or canvas laminated over foil. Likening it to a dance, she begins with a sheet that is six feet or twelve feet on each side, stretches her body across to reach a distant corner and even periodically finds herself inside the animal while she is folding it. “Some origami designs just seem divine,” she says. “When the math is really clean, every part of the origami is beautiful. Little pockets will come out and magically line up. There are no fudges.”



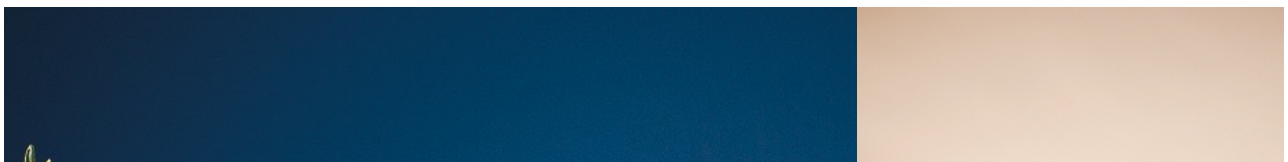
Bonnie Cherni, the leader of Epic Origami, also teaches the craft to the next generation through origami workshops at local Big Island elementary schools, seen at right. At left, *Pua'a, Wild Pig* folded by Nakaya.

Mathematical origami is what holds group member Steven Epstein's interest. Epstein, a software engineer, studied higher mathematics and picked up origami shortly after he met Cherni in 1993, when on their first date she taught him how to fold an origami horse. He still occasionally helps her fold creatures like a three-horned Jackson's chameleon, but mostly he now leans toward modular origami, folding branched, geometric designs that look like seed capsules or snowflakes.

Cherni herself always comes back to her favorites —penguins, giraffes, dragons and the like. "Mine is very heart-driven," she says of her work. "I fold origami that will make people smile." In fact, it was one of Cherni's

dragons that brought Nakaya back to origami; the veterinarian was at Cherni's on a house call for Cherni's cat when she happened to spot a little purple origami dragon. After folding all of those cranes in her youth, she'd burned out and given up on origami, but the dragon re-awakened her interest and she found a field that had transformed.

Like Cherni, Nakaya gravitates toward folding animals, but she prefers complex figures that mimic the details and proportions of their living counterparts. Folding a swallow, for example, she pleats the wings closer to the tip than the pattern shows because she's thinking of fork-tailedgreat frigate birds that patrol the skies over Hawai‘i Island; this is, after all, a woman who once worked at an avian surgical practice in Boston. Then there's Lozi, who started folding origami as a child in France and is now a senior optical scientist at the Subaru Telescope, where he develops instruments to find and observe planets orbiting other suns. "I've always loved paper," he says. "The texture, the fibers. It's very close to nature." His supply includes very strong and very thin papers made by hand in France—perfect, he says, for figures where more than one hundred layers could be folded into a single wing or leg.



Cherni, seen above holding a three-horned Jackson's chameleon she made with member Steven Epstein, has practiced the art for more than thirty years. At right, an 'io, or Hawaiian hawk crafted from handmade paper and folded by French member Julien Lozi.

The two virtuosos of Epic Origami, Vietnam's Nguyên Hùng Cuòng and France's Nicolas Terry, live abroad and send their sculptures to Hawai'i by mail. Both incorporate some of the most avant-garde aspects of modern origami into the patterns they design: Cuòng, for example, designed a gray shark on a swirling blue wave and a pair of wet-folded bunnies that look to be made of stuffed fabric though they're actually paper; Terry, who has published several origami books, designed a troll, a smiling frog and a striding lizard warrior replete with breastplate, shield and sword.

There's something profound about looking at modern origami sculpture and realizing it all started with a flat quadrilateral. Cherni would be the first to agree. "To be

able to fold some of these pieces, you have to be so exacting," she says. "But you also have to have strange feelings, like faith, because it takes so much to get through it. The reason I probably do well at this is because I'm just silly enough to try it." **HH**

Cherni also folded this piece, which is titled *Different;* it too was designed by Montroll. "It's an iconic piece," Cherni says, "that represents the cultural differences in Hawai'i."

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