

BUCKY'S WORLD

"MY POST OFFICE IS IN
SUNSET, MAINE, BUT
I AM TRYING TO
HAVE THEM
CHANGE IT TO
SUNCLIPSE."

R. Buckminster Fuller (1895–1983) was one of the greatest minds of the 20th century. This traveler on "spaceship Earth" found inspiration and renewal on his island home in Maine. BY LESLIE BOWMAN AND TORI BRITTON



The Dymaxion World Map projected the Earth's land masses on a flat surface with the least distortion. *Life* magazine published this map, putting Fuller in the national spotlight. The reader could cut out and assemble the page into a globe.

PHOTO TOP: THE FULLER PROJECTION MAP DESIGN IS A TRADEMARK OF THE BUCKMINSTER FULLER INSTITUTE 1938. 1967 & 1992. ALL RIGHTS RESERVED. WWW.BFI.ORG. OPPOSITE PAGE: COURTESY OF THE ESTATE OF R. BUCKMINSTER FULLER

Buckminster Fuller was America's most colorful green advocate long before the term was coined. His family's summer home on Bear Island in Penobscot Bay provided a natural template for his wide-ranging mind, which produced 30 books, 28 patents, more than 150 awards and honorary degrees, and an intellectual legacy that continues to inspire new generations of scientists and inventors 27 years after his death.

Fuller is most famous for inventing the geodesic dome. Found on playgrounds throughout the world, and used in at least 50,000 buildings (including one at the South Pole), this structure can freely span large areas using the basic elements of the triangle, which Fuller identified as the most stable shape in nature. The U.S. Pavilion at Expo 67 in Montreal was the first major geodesic dome demonstration. Fuller called it his "Taj Mahal to Anne," in honor of his wife. Epcot Center in Florida, is another famous example.

But the geodesic dome was just one of hundreds of Fuller inventions. He believed that there were enough resources for all, contrary to the traditional Malthusian

economic notion of scarcity. Late in life, he devised a curriculum for college students called "The World Game" with a premise that you could make the world work for 100% of humanity without environmental degradation or disadvantage to anyone.

Some of Fuller's work, like the geodesic dome, has become part of our culture. His Dymaxion Map of the world (see above) presented Earth's landmass without the distortion of previous flat maps. Fuller popularized terms like "synergy" and "spaceship Earth." After his death, a molecule was discovered that is shaped like a geodesic dome, and was named a Fullerene in his honor. This molecule, also known as the "Bucky Ball," is an important part of nanotechnology—a branch of science that is the logical conclusion to Fuller's idea of accomplishing more and more with less and less.

Certainly a man ahead of his time, and perhaps ahead of ours, "Bucky" Fuller was a world citizen, traveling extensively, meeting with national leaders, and speaking to large audiences. During decades of famously fascinating and long-winded lecture tours, he explained the wonders of the tetrahedron, complained about the absurdities

of war and modern plumbing, and urged young scientists to use their skills for the good of humanity.

With his wife of 66 years, Anne Hewitt Fuller (the quiet and stabilizing force in his life), he lived many places including Carbondale, Illinois, in his 36-foot-diameter dome. But Maine was the one place he called home.

Summers at Bear Island

Fuller first visited Bear Island with his father and grandmother in 1904, at the age of 9. His grandmother, Caroline Matilda Wolcott, had purchased the island that year with the intention of establishing a family gathering place. Fuller would visit the island virtually every year of his life until his death at age 88, in 1983. In 2004, true to his grandmother's wishes, over 350 family members and friends gathered on-island to celebrate the centennial.

Life on Bear Island was rustic, what we now call "off the grid." The daily chores included carrying water from the well and cistern, gathering wood to tend the fires, and filling the kerosene lanterns. During



Top: From the age of 9, Fuller (right) spent his summers on Bear Island in Maine. Right: In 2004, Fuller's grandnephew Deacon Marvel built a 21-foot tensegrity dome, recreating the one his great uncle had made out of basketry in 1961. Fuller's original dome, long since destroyed by the elements, had been built on the south end of the island. Fuller named it Sundipse Dome.

Fuller's childhood, the only means of communication to the island, which the family shared with other summer visitors, was mail—requiring a dory trip to a nearby island.

Ironically, traveling to Bear Island in the early days was far easier than today. Before WWI the family would leave by steamship from Boston Harbor at 5 p.m., and by 3 a.m. arrive at Owls Head Light at the entrance of Penobscot Bay, where they would dock at Rockland Harbor and change boats for a short trip to Bear Island. Today airport connections and traffic on Route One have made the journey more complicated.

Consisting of 42 acres, Bear Island is part of a small archipelago in East Penobscot Bay, about 11 miles east of Camden. Along with forests and fields, the island has a dock and several traditional New England wood frame buildings. Though Fuller once built a 21-foot tensegrity dome that was recently reconstructed, none of his designs were used on the island for shelter. Bear Island's draw, for Fuller, was its primitive simplicity.

During the family's summer visits to the island, young Bucky farmed, fished, and took care of buildings and boats. As a young man, Fuller was particularly influenced by a year-round island caretaker named Jim Hardie, who demonstrated great drive for self-education and a relentless work ethic. He was a skillful builder and fisherman who could improvise to solve problems, a model of Yankee ingenuity.

Fuller especially loved boats, which were a preoccupation on the island. To him, they were models of invention and elegance, and the engineering principles he learned operating and tinkering with boats were foundational to his thinking.

There were several boats used for recreation and utility. Perhaps the most famous craft was the *Wego*, the family's small power cruiser which was put into



commission by the U.S. Navy in 1917 during WWI. She was commanded by captain Bucky and a small crew and served for about a year before being deemed too slow for service—but not before making a dramatic discovery of German refueling operations at Cross Island near Machiasport. Another vessel that Fuller designed to be stable in rough seas was called *Rowing Needles*. It was propelled like a rowboat but floated, like a catamaran, on two long pontoons. Fuller once said that he considered *Rowing Needles* to be his most refined invention—an exceptionally pure demonstration of his design philosophy.

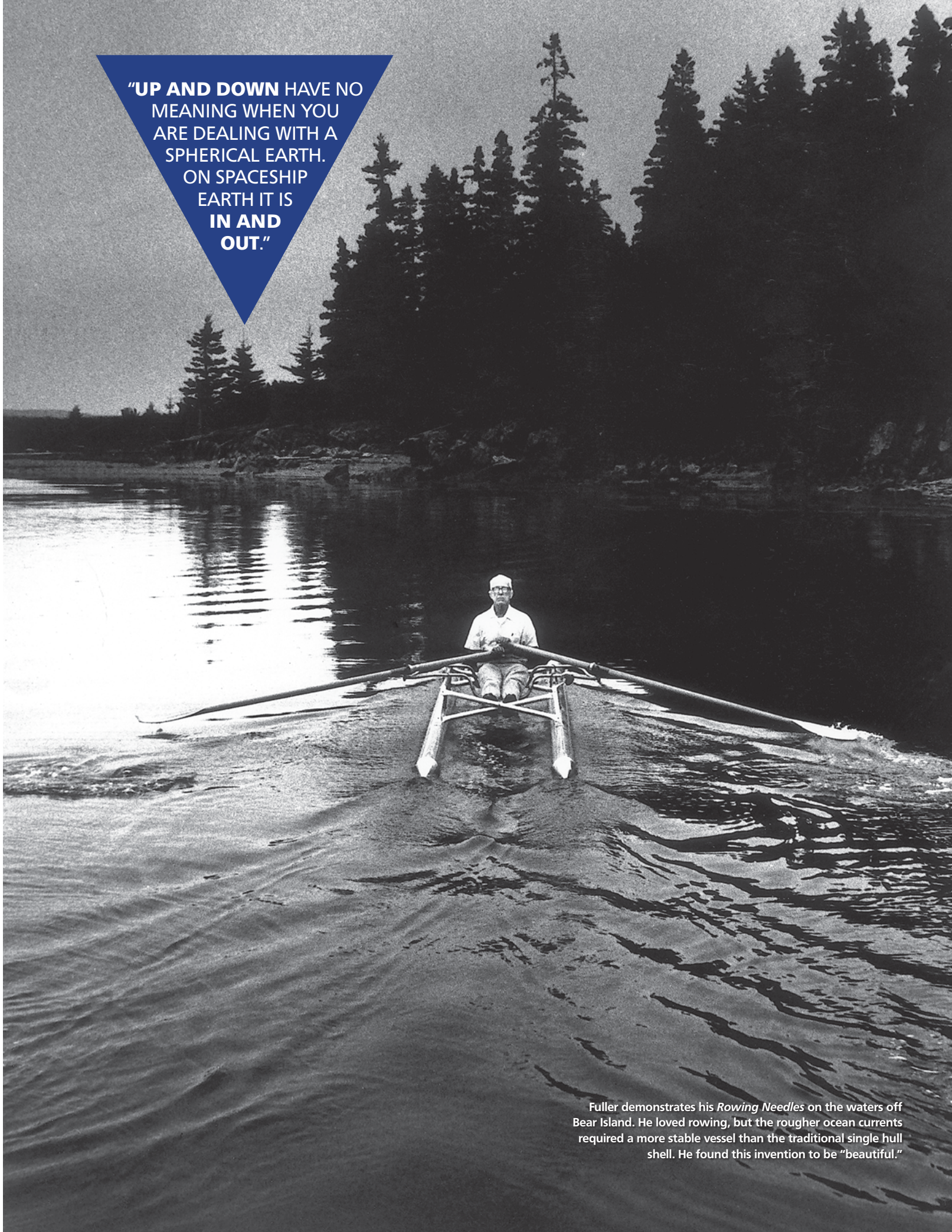
The Making of an Original Thinker

The simplicity of his summers on Bear Island stands in sharp contrast to Fuller's complicated life path.

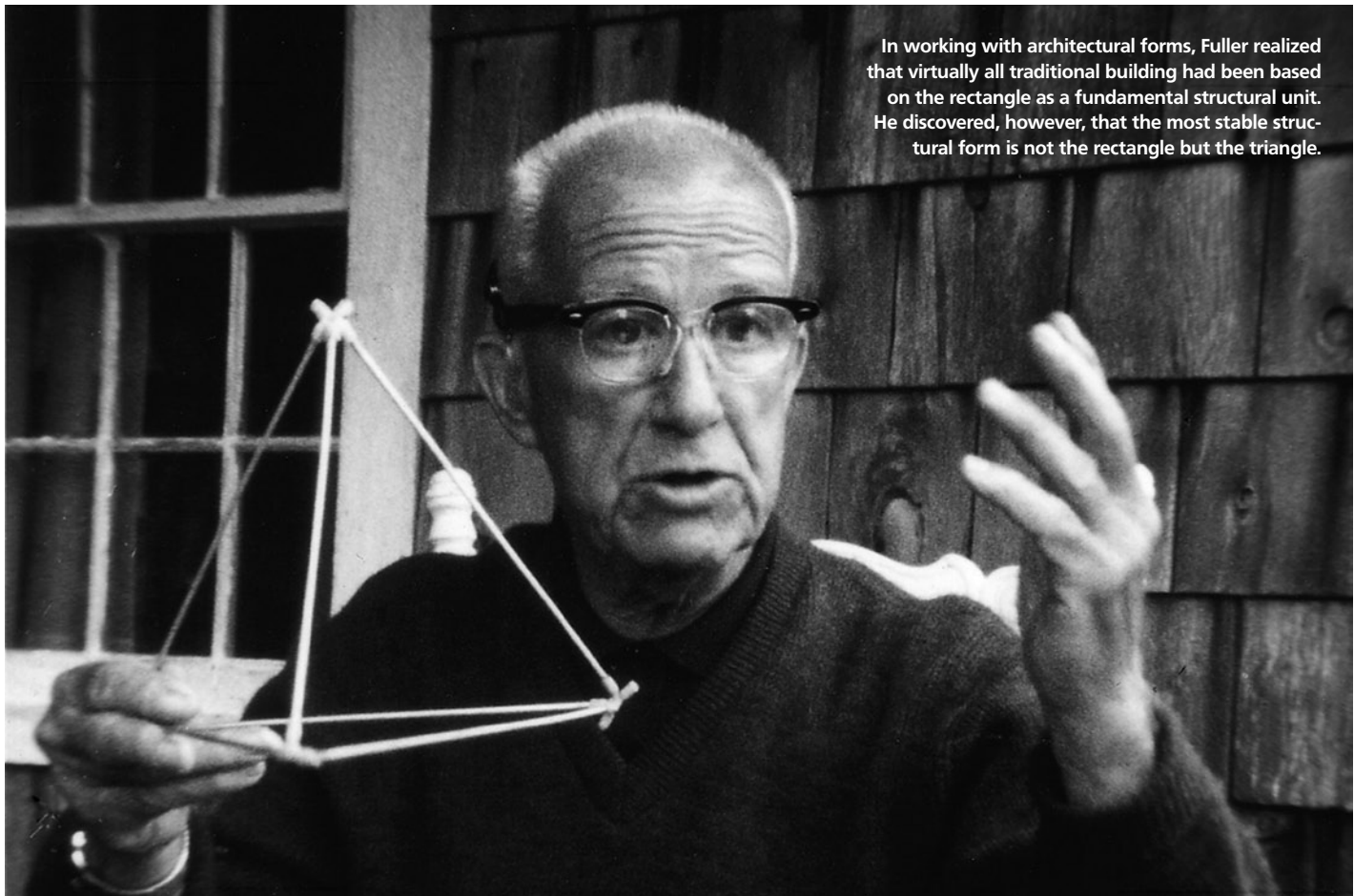
Bucky was an original and obsessive thinker early on. At age 12, he began saving his correspondence, notes, and sketches, providing precious information about

PHOTO TOP: AND OPPOSITE PAGE: COURTESY OF R. BUCKMINSTER FULLER; LEFT: DEACON MARVEL

"UP AND DOWN HAVE NO MEANING WHEN YOU ARE DEALING WITH A SPHERICAL EARTH. ON SPACESHIP EARTH IT IS IN AND OUT."



Fuller demonstrates his *Rowing Needles* on the waters off Bear Island. He loved rowing, but the rougher ocean currents required a more stable vessel than the traditional single hull shell. He found this invention to be "beautiful."



In working with architectural forms, Fuller realized that virtually all traditional building had been based on the rectangle as a fundamental structural unit. He discovered, however, that the most stable structural form is not the rectangle but the triangle.

ocabulary

Synergy: the behavior of the whole system unpredicted by the behaviors of any of their parts

Spaceship Earth: used often to describe the interdependence of all global systems

Ephemeralization: progressively accomplishing more with less in order to promote a more efficient allocation of resources

Dymaxion: the use of technology and resources to maximum advantage, with minimal expenditure of energy and material

Livingry: juxtaposed to weaponry and killingry, it means that which is in support of all human, plant, and Earth life

these early years on Bear Island. This archive would later become part of Fuller's *Dymaxion Chronofiles*, a detailed record of his life that, at the time of his death, contained over 140,000 papers and 700 volumes.

While scientific thought and athletic pursuits came easily to him, fitting in socially did not. In 1913, Fuller entered Harvard University, then got himself kicked out by deliberately missing exams.

His family sent him to work as an apprentice millwright in a cotton mill in Quebec, presumably to teach him the value of his Harvard education. Instead, Fuller loved the tangible, physical work. Though accepted back at Harvard, he managed to get himself dismissed again, because, as his daughter Allegra Fuller Snyder would later explain, "he felt that all he was asked to do was memorize, not validate through experience." Fuller joined the Navy Reserve and had a similar affinity for the hands-on. That same year, he married Anne Hewitt and immediately felt the pressure to become a worldly

success. He started a company with his father-in-law specializing in lightweight building materials. The brilliant young inventor was no businessman, and five years later was ousted from the company.

That failure and the death of his and Anne's 4-year-old daughter, Alexandra, brought Fuller to a crisis point. Fuller decided to stop trying to earn a living and instead, he said, "made a bargain with myself that I'd discover the principles operative in the universe and turn them over to my fellow man."

Bucky Fuller had no money, and he and Anne had a newborn daughter, Allegra,



Allegra Fuller Snyder (right) with her granddaughter Olivia Allegra May on Deer Isle in 2009.

PHOTO TOP: COURTESY OF THE ESTATE OF R. BUCKMINSTER FULLER

but he would go on to keep his promise. For about a year he spoke as little as possible, and instead thought and wrote. In 1928, he emerged with a business plan and manifesto called 4D Time Lock, outlining his notion for a new type of low-cost, mass-produced housing, which he distributed in 200 mimeographed copies. This began a series of designs Fuller created

Part of what makes Fuller's writing challenging is his compulsive need to describe things accurately.

using an approach he called Dymaxion—a combination of "dynamic," "maximize," and "ion."

Dymaxion meant something that achieved the most dynamic benefit using the least amount of resources. His Dymaxion House was followed by the three-wheeled Dymaxion Car in 1933. (One of its first public demonstrations, featuring Amelia Earhart in the back seat, can be seen on YouTube.) A fatal hit-and-run accident involving a driver of a demo car squelched the project. Fuller was grieved over the loss of life, but unfazed by the loss of revenue.

In 1943, Fuller's Dymaxion World Map was published in *Life* magazine, putting Fuller into the national spotlight. Later, a house he designed from airplane machinery and materials, called the Witchita House, was featured in *Fortune* magazine. Orders for the home came in, but Fuller wasn't interested in selling his design, infuriating many. This was one of many times in his life when he could theoretically have made a fortune from his work, but couldn't be bothered. His attitude about wealth was summarized in this oft-quoted Fullerism: "You can make money or you can make sense."

Buckminster Fuller wanted to make sense, but much of his written work was difficult to comprehend. Part of what makes Fuller's writing challenging is his compulsive need to describe things accurately. Terms like sunrise or sunset were maddening to Fuller, as the sun merely moves out of view. He preferred the term "sunclipse." Fuller created his own unique



At a table with a vast library and various models, Richard Fischbeck is one of the few people who have a working understanding of Synergetics, Fuller's method of geometric thinking.

Following Bucky's Triangular Pathway

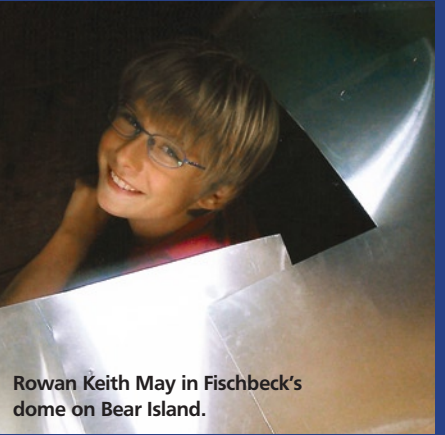
In the summer of 2008, Rowan Keith and Olivia May—Buckminster Fuller's great-grandchildren—were able to experience firsthand the construction of a geodesic dome during their Bear Island vacation. Allegra, daughter of Buckminster Fuller, invited Richard Fischbeck of Freedom, Maine, to come on-island with his newly patented dome design and set up shop. Together with his partner, Julie, and various members of the Fuller extended family, a "Randome" was riveted together.

Richard Fischbeck first experienced the work of Buckminster Fuller as a child when his parents took him to Expo 67 in Montreal, featuring a 250-foot-diameter geodesic dome in the U.S. Pavilion. He later traveled the country living in alternative structures, including a tepee and at one point lived in his own geodesic dome in Belfast.

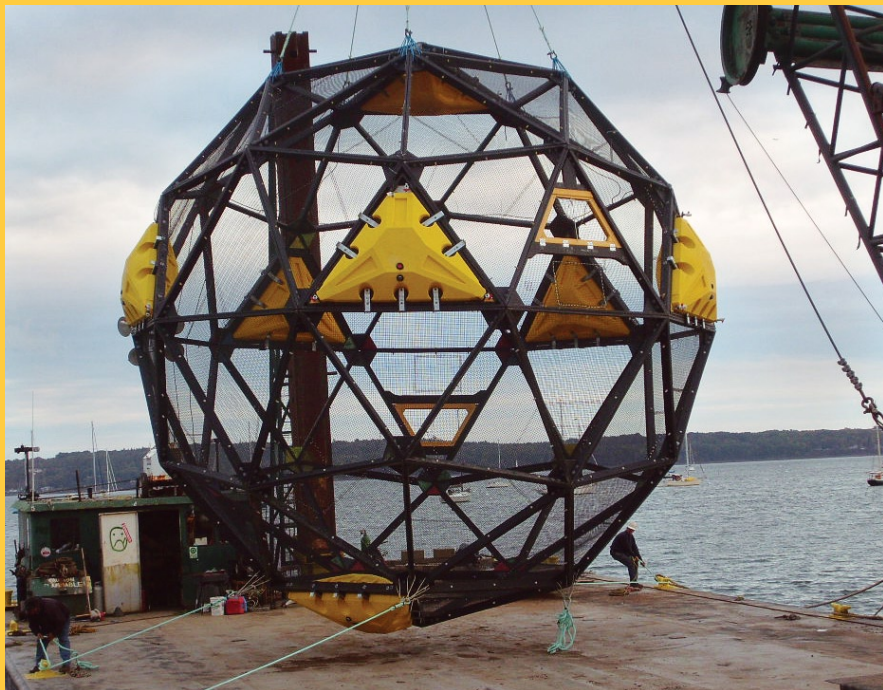
Fischbeck's dome relies on the vertices of the form for strength and can be easily constructed without complicated measurements and cuts. In fact, he can teach someone how to build a dome in five or 10 minutes. Then, with a simple pattern, he or she can apply the method to a variety of materials. This design enables people to build simple structures out of readily available materials in order to have shelter with minimum time, equipment, and funding.

Today, from his Freedom home, he is involved in designing ultra low-cost housing for the world's poorest and unhoused people. Working with a group of designers in California at World Shelters, he shares a common commitment to see that all people have adequate housing on safe ground. World Shelters currently is making geodesic domes into temporary shelters for Haiti's earthquake survivors.

Richard Fischbeck is currently employed as a special ed teacher in the Waldo County school system and is able to teach math and physics principles through his structures projects.



Rowan Keith May in Fischbeck's dome on Bear Island.



THE AQUAPOD

In the cold waters one-half mile off Sorrento in Hancock County, codfish are being grown by Great Bay Aquaculture of Maine in a 32-foot geodesic aquapod. Steve Page of Ocean Farm Technologies designed this Fulleresque structure after years of working with traditional fish pens in eastern Maine.

The Aquapod is constructed of individual triangular net panels fastened together in a spheroid shape. It functions as a secure

containment system for finfish while submerged or partially surfaced. While working with various ideas for new cage designs, Page had a “ta-da” moment when his hemisphere dome shapes completed a full sphere. “It became unbelievably strong,” he says. In order to even consider growing fish in the open ocean, the cages must be able to withstand and work with tremendous energy. Page found the needed strength in the geodesic sphere.

The Aquapods are now deployed in four countries. Maine Technology Institute was instrumental in helping to launch this company, and today private capital and sales contribute to Ocean Farm’s success. But the ball has just started rolling, with ideas flying about new developments that include growing algae with fish and linking offshore wind farms with fish farming. It is all doable, says Page, but it will take money in research and development.

As a college student in Stanford in the 1960s, Steve Page was very aware of Buckminster Fuller and his ideas. At one point, he even helped a friend build a geodesic dome, but like many of his generation, his appetite for the design died when the panels leaked around the seams. Perhaps it was the gestation time that Fuller so often referred to in his lectures. With new opportunities and refined methods of application like Page’s Aquapod, Fuller’s geodesic spheres are now helping to feed humanity.



language, redefining existing words or inventing new ones, and writing in cryptic phrases.

Allegra Fuller Snyder, Buckminster Fuller’s only living child, remembers what a struggle it was at times for her father to find the right word to say what he meant.

“I thought my father was like all fathers,” she says, but most people do not have to weigh each word to accurately express their experience.

“Daddy was a great teacher, always respecting the child’s mind,” she says. “He believed all children were born geniuses.” When listening to others, “he was very attentive and often asked for you to go deeper to experience the process of your thinking.” Snyder recalls having animated discussions where hands were flying and feet dancing. Snyder, in fact, went on to study dance and is today a leading dance ethnologist. When her father began giving lectures, she suggested that he use that same expressive body language that she had experienced. That coaching was crucial to his success in capturing an audience’s imagination.

Snyder acknowledges that his written language is also hard to follow and she is grateful that other writers have taken on the task to make his work more accessible. “He had no intention to be mysterious; he just wanted to be clear.”

Back to Bear

Everything always became clear for Buckminster Fuller on Bear Island. Throughout his life, even as he became more and more respected and in demand largely through the success of the geodesic dome, Fuller would make at least one annual pilgrimage to Maine, if only for a few days.

“Uncle Bucky loved being on Bear Island whenever he could,” says his niece Lucilla Fuller Marvel. “Bear was the one constant place he knew and cherished. We could feel his love for the island. It was home.”

In 1965, Calvin Tomkins, noted writer for *The New Yorker* magazine, spent four days on island with Bucky and clan. Tomkins’ famous account included daily trips to the men’s nude beach on the north side of the island, where he learned Bucky’s method of getting used to the frigid water: “You go in and out quickly several times, warming up in between dips; after a while the pain becomes slightly less agonizing.”

Fuller would go to Bear Island many more times after that 1965 visit. He

PHOTO TOP: COURTESY OF STEVE PAGE



PHOTO: COURTESY OF THE ESTATE OF R. BUCKMINSTER FULLER

continued to write and lecture into his 80s. He did not truly slow down until his wife fell ill in 1983. He died of a heart attack at her hospital bedside; she died 36 hours later.

Their daughter Allegra Fuller Snyder founded the Buckminster Fuller Institute (BFI) the year her father died. Today, the Buckminster Fuller Institute is the starting place for anyone wanting to continue his work. Based in California, with an extensive web presence, BFI has just opened a new study center in Brooklyn, New York.

Among their programs is the Buckminster Fuller Challenge, which awards a \$100,000 prize each year to support the development and implementation of a strategy that has significant potential to solve humanity’s most pressing problems.

While Snyder’s love and admiration for her father is evident, she seems uncomfortable with the notion that he was uniquely gifted.

“He believed he was just a regular human being and that anyone could accomplish what he did.” □

Black Mountain College in North Carolina was a mecca for creative people in the 1930s, ‘40s, and ‘50s. Among those greats were Ben Shahn and Kenneth Noland, who also had roots in Maine. In 1948, Fuller taught his first of two summer sessions at Black Mountain. The first summer, he and his students attempted to build the first large-scale dome using venetian blind strips. It failed, and the structure was subsequently referred to as the “Supine Dome.” The next summer, with sturdier materials (pictured here), they were successful.