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R. BUCKMINSTER FULLER'S LEGACY HERE/ CLIMATRON SAVED GARDEN; E. ST. LOUIS DOME WAS DUMB

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From 1960 when the space-race era geodesic Climatron opened at the Missouri Botanical Garden to 1971 when residents of East St. Louis gathered to hear a fantastical plan to build a mile-wide dome over their blighted city, few people had as much influence on the architectural imagination of St. Louis as R. Buckminster Fuller.

To this day the Climatron may be second only to the venerable Arch among the city's best-known structures. The ethereal ball represented a stout-hearted American response to the Soviet Union's Sputnik satellite. It was built as "Bucky's" star was rising and the crush of visitors who came to marvel at the creation when it opened on Oct. 1, 1960, might have believed that a new era of design science had arrived. It was to be an era, according to Fuller, where smart application of technology would be brought to bear on a host of millennia-old human problems. The Climatron was just the beginning.

But in 1971 when Fuller unveiled his grand vision to build a man-made moon-crater dubbed Old Man River City to solve the housing problem in East St. Louis, his ideas suddenly seemed more ridiculous than revolutionary. Despite a few earlier large-scale successes -- his domes had done little to transform the residential housing market in the United States. The structures had been embraced by countercultural hippie communes in the West, but mainstream America had shied away.

As Illinois legislators derided Old Man River City as a "solar rib pit," concerned citizens of East St. Louis asked Fuller if the idea was one that would finally lock them in, rather than liberate them from, their city. Fuller went from practical visionary to hopeless dreamer in 11 short years.

How?

Failure precedes Climatron

The maverick inventor had endured more than a few failures by the time he appeared on the St. Louis scene. He dropped out of Harvard twice and ran a family business into the ground before embarking on a career to change the world through design. His earlier ideas had included mass-produced, inexpensive and highly efficient homes and cars. Though the military purchased a few of the corrugated metal dwelling units and a prototype of one of the teardrop-shaped cars made a splash at the 1933 Chicago World's Fair, these projects were commercial flops.

Fuller's early experiments with geodesic domes were inauspicious, as well. In 1948, he built his first dome at the experimental Black Mountain College in North Carolina. Working on a tight budget and with makeshift materials like aluminum venetian blind strips, Fuller erected a 50-foot diameter dome. It briefly held its shape and then collapsed.

Fuller's response was typical of one who refused to be thwarted by failure or to acknowledge fallibilities. He had deliberately designed the structure to be weak so that he could see the point at which it would collapse, he said. He was convinced that he would eventually get it right.

In 1952, Henry Ford II hired Fuller to build the Ford Rotunda in Dearborn, Mich. This was to be the first large industrial test of geodesic architecture. Ford's engineers reportedly were so worried about the stability of Fuller's proposed design that they secretly drew up plans for a more conventional structure.

The 8.5-ton dome was finished below budget and two days ahead of schedule. Moreover it was sturdy enough to be the centerpiece of Ford's 50th anniversary celebration.

The Ford project attracted worldwide attention. Fuller patented the geodesic dome in 1954 and by 1960 at least one firm, North Carolina-based Synergistics, had sprung up as a licensee of the technology.

And so when Frits Went needed an innovative replacement for the Missouri Botanical Garden's Palm House, the stage was set for the Climatron and for Fuller.

It saved the garden

Went's garden of the late 1950s needed help. The Palm House, the garden's main public exhibit, had fallen into disrepair and attendance was down. Finances were tight for his staff of 70-80 people, most of whom were engaged in research to collect and categorize seeds and plants.

According to Eugene J. Mackey III, whose father was one of the Climatron's architects, Went wanted simply "a column-free space that could accommodate multiple climates." A dome was the obvious answer.

Mackey, today a successful St. Louis architect himself, has several recollections of his father's experience in designing the Climatron. He said that while Went enthusiastically backed the idea, some on the garden's more conservative board remained skeptical. Echoing concerns expressed a few years earlier in Michigan, one of these board members -- Mackey doesn't remember who -- suggested to Went that he keep the original drawings for the Palm House so that it could be rebuilt when the dome fell down.

Yet when the Climatron opened in 1960 the results were dramatic. Attendance spiked. Colligan said it was not long before fees charged to those visiting the Climatron represented the most significant single revenue source for the garden.

The Climatron's design earned Mackey's father the prestigious Reynolds Award for innovative use of aluminum in a building. "It was the first time an American had won," said Mackey. "The $25,000 prize was a big deal at the time."

Other dome projects followed, including the now iconographic Epcot, which opened in 1982. The government became a customer, too, buying the sturdy domes to house early warning radar equipment in the Canadian arctic. Fuller made the cover of Time magazine on Jan. 10, 1964, his bespectacled head drawn to look like one of his beloved domes. He was on a roll.

So when the famous dancer and East St. Louis resident Katherine Dunham approached Fuller with a request to apply his ideas to help the marginalized citizens of her town, hopes were high.

A brave new city

Dunham's city did need help. White residents had fled East St. Louis in droves as had many of the well-paying industrial jobs. Its future -- in which fire engines would have to be jump-started, garbage would not be collected for years, and government employees would be told to bring their own toilet paper to work -- was already clearly visible.

Washington University architecture professor William P. Wischmeyer was one of the students who worked on the miniature model of Fuller's grand plan to save the city. The moon-crater structure covered with the trademarked dome appeared to be straight from the world of science fiction. And the proposed scale -- Old Man River was to be a mile-diameter mega structure that would house 125,000 people -- strained even the best imaginations.

Wischmeyer and his fellow students, along with Washington University professor and Fuller's friend Jim Fitzgibbon, did all the design and model-building on a volunteer basis often working late into the evening. It was exhilarating to think that architecture could be applied to the day's pressing social problems, Wischmeyer said. "We could do more than just march against the war."

Fuller, as famous for delegating work as for innovation, had left most of the detail to Fitzgibbon and his students. And Fuller's reaction to the model, which he first saw the night of his much-anticipated presentation to more than 100 East St. Louisans, hinted at the trouble he would find in Old Man River City.

It was an unfortunate moment, said Wischmeyer. Rather than congratulating the students and thanking them for their work, Fuller spent the last minutes before the presentation directing the students to make minor changes to the model. No one would have noticed the difference, said Wischmeyer. Fuller was at least as interested in his vision as he was in the dozens who'd come to hear how they might be saved by it.

Trouble continued when the presentation began. Several in attendance expressed concern that Fuller's beloved dome, which

reached all the way to the ground to enclose the moon-crater structure, might have been about more than just energy efficiency. Some said it looked like a jail. Others worried that the structure would be used by powerful whites to control mostly black East St. Louis.

The fate of the project might have been sealed in an exchange between Fuller and one particular attendee. Wischmeyer remembered the tough-looking young man telling Fuller that "we don't need domes. We need jobs."

Fuller's delegates had calculated that the massive project -- they measured out the steel they would need in thousands of miles -- would take years to build and lead to thousands of local jobs. Yet Fuller opted for a more messianic response. "Young man, I see a future where you won't need jobs," Wischmeyer remembered him saying.

That the project did not die then is testament to Fuller's ability to attract other true believers, among them Wyvetter Younge. At the time, Younge was chairwoman of the East St. Louis Planning Commission and a big supporter of Fuller's. She continued to support the project once she was elected to the Illinois legislature in 1975.

Like Went, Younge defied convention. Her early days in Springfield were marked by legislation to create a self-governing Israeli-style kibbutz in East St. Louis and to make the city the site of a World's Fair. And year after year she continued to push for funding for Old Man River City. In a 1983 article in the St. Louis Post-Dispatch, the year of Fuller's death, Bill Lambrecht wrote that her bill to build the dome over the city -- critics in the Legislature derided it as a "solar rib pit bill" -- was being held for study for another year.

The unprecedented cost of the project, more than $700 million in early 1970, was only one of the reasons that work on Old Man River City never really began. Fuller's insistence that supporters avoid federal loans -- he considered the interest payments to be ruinous -- did not help matters. Nor did the death of Fitzgibbon, whom Wischmeyer said was heart and soul of the project. But perhaps most important, and most subtle, is the fact that ever more grandiose ideas ran counter to the changing 1970s and 1980s.

By then the space race was over and the United States was more interested in using technology to plug leaks in the dam that was holding back communism than to liberate the human spirit.

St. Louis legacy

Many of those touched by Fuller remain prominent in St. Louis. Mackey has carved out a successful architecture career and place in the fabric of St. Louis life. He designed a research and development lab for bioMerieuxVitek Inc. and a $26 million ambulatory care center for Saint Louis University. He is responsible for Power House Place, too, which was recognized by Downtown St. Louis Inc. as one of the most ambitious and successful urban design projects downtown.

Wischmeyer is comfortably ensconced at Washington University. He had a successful career in private practice, but said that he rarely used Fuller's ideas in the various buildings he designed. Fuller's work has more cultural than architectural relevance, Wischmeyer said.

Reached in her office in East St. Louis, Rep. Younge -- now one of the longest serving state lawmakers -- still speaks as if there might be a chance someday to begin the project. She said that the Old Man River City Corp., formed to raise money for its development, still exists in a dormant state. And she said that the idea was very much alive at a 1996 "syntegration" meeting among Fuller's supporters and friends. Yet her days of legislation about kibbutzes, World's Fairs and mile-wide domes appear to be behind her.

Some suggest that Younge's efforts to call attention to East St. Louis ultimately did help the city. Federal and state intervention addressed some of the worst municipal corruption and mismanagement. And when the Illinois legislature approved riverboat gambling several years ago, East St. Louis was the one town guaranteed a floating casino. Other municipalities had to bid to bring the gambling boats to town. Today the Casino Queen is an important source of revenue and employment for the city.

The Old Man River City Corp., no listing for which is found in the phone book, does still have a putative president, Richard Pollack. Reached at his home, the retired aerospace engineer said he remains a fan of geodesics, so much so that he is building an 850-square-foot dome to live in near the Lake of the Ozarks. "Energy costs keep going up," he said.

The total cost? "About $50,000," said Pollack, "and that doesn't include the cost of the kit to build the dome itself."

The Climatron is still a fixture of the garden and greater St. Louis. The promise of multiple climates, even after a 1990 renovation, was never really delivered. Today the dome encloses one big steamy tropical garden.

"All I know is that my glasses fog up and the wrinkles fall out of my shirt every time I go inside," said Colligan.

Colligan said that the dome remains a big draw for visitors, especially children. The garden itself has a staff of more than 300 people and host tens of thousands of visitors each year. Current director Peter Raven is a world-renowned conservationist and was named a Hero for the Planet in 1999 by Time magazine.

Old Man River City by contrast exists only in drawings and models, most of which are locked away in a Stanford University archive. Yet Younge said this material is much like the seeds stored across the river at the Missouri Botanical Garden. An army of Bucky fans remain in the world, she said, who may yet help his ideas to germinate when the time is right.

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GRAPHIC: PHOTO; (1) Color Photo by THE ASSOCIATED PRESS - R. Buckminster Fuller looks at the world through a "tensegrity" model, in his office at Southern Illinois University Carbondale in this February 1971 photo. The designer's tensegrity theory is based on principles similar to those of his geodesic designs, relating back to his view of the common, basic structures of all things in the universe./ (2) Color Photo - Attendance at the Missouri Botanical Garden spiked in 1960, the year the Climatron opened./ (3) Photo by FILE PHOTO - R. Buckminster Fuller details his plan for revitalizing East St. Louis by placing the city under a giant dome. The designer shared his vision for the city with the East St. Louis Planning Commission in February of 1971. The plan never got off the drawing board. Fuller died July 1, 1983. He was 87./ (4) Photo by POST-DISPATCH FILE PHOTO - The landmark Climatron at dusk at the Missouri Botanical Garden. The success of the Climatron, opened in 1960, led to other dome projects, including the now iconographic Epcot in 1982./ (5) Photo - R. Buckminster Fuller graced the cover of Time magazine on Jan. 10, 1964./ (6) POST-DISPATCH FILE PHOTO - Lisa Kirchgessner, a junior at Southern Illinois University Edwardsville in this 2002 photo, participates in a homelessness simulation under the geodesic dome at the Religious Center at the university. R. Buckminster Fuller was author of 25 books and held visiting professorships or lectureships at more than a dozen universities, including Washington University. He was an emeritus professor at Southern Illinois University.

TYPE: PROFILE/R. BUCKMINSTER FULLER