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Sustainable and Affordable

Architect Hank Louis provides concrete inspiration

PHOTOGRAPHY BY LINDA C. PEER

SOMEWHERE AMONG THE TANGLED AND TONY Park City streets, there's a jungle-trained professor who's teaching tomorrow's architects how to design out of their own boxes.

Hank Louis is a middle-aged, white-haired guy who wears a flat-brimmed western hat, and who has the aspect of a turn-of-the-century, cow-town pharmacist or doctor. But his modern architecture firm in Park City just won a 2007 Rocky Mountain Institute award for Earl's Silo—a design for turning a metal grain silo into a home.

He began working with University of Utah students in 2000, with projects including a bandstand in Park City and later a straw-bale house for Tibetan refugees in Salt Lake City. He moved the program to Bluff, Utah, in 2003, calling it DesignBuildBLUFF. There, among the undulating red cliffs of the Navajo Nation and San Juan County, as in many parts of the world, resources are limited, utilities can be nonexistent or uncertain, and the future is unknowable. The students' assignment: Design and build houses that are sustainable and green, use local and recycled materials, and do it on a small budget.

"We take the architects of the future to a site situation where there is no grid whatsoever," says Louis, "and have them rethink how we've become so reliant upon fossil fuels, and so complacent about water miraculously arriving at our taps."

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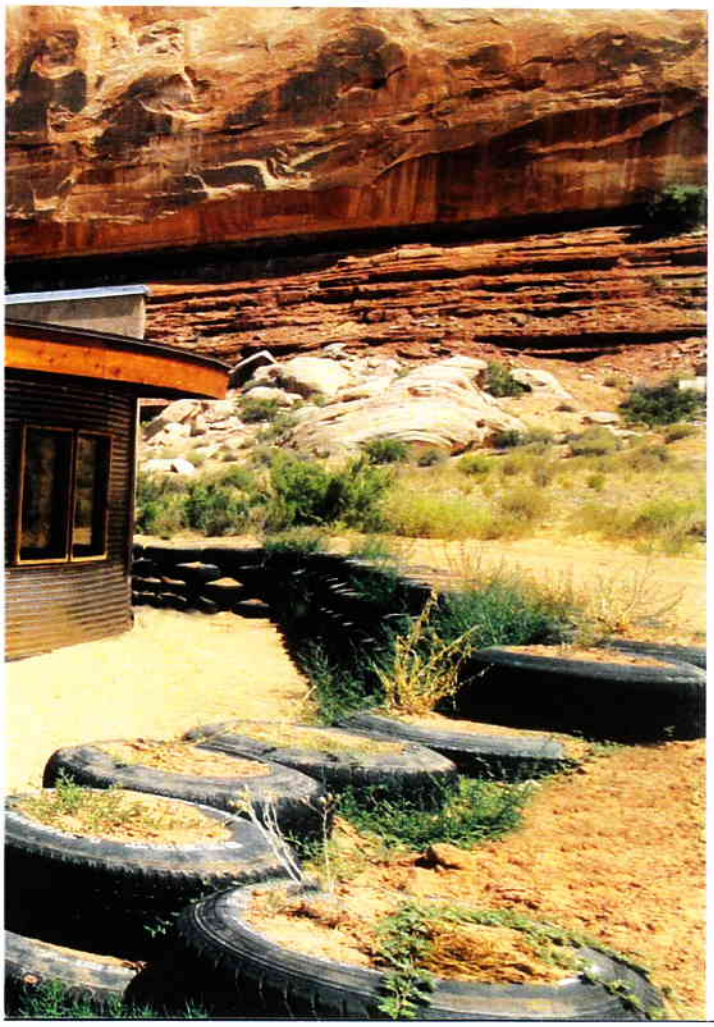
Louis's hands-on program joins a handful of similar programs nationwide, and an even smaller number that teach affordable, green building design. The word is getting out. *Dwell* magazine will include one of the houses in its solar issue this fall. And Stan Bertheaud, a California-based screenwriter and producer, has been talking with Louis about possible inclusion in an upcoming series on design-build programs. "Definitely, Hank's program is unique," Bertheaud said.

The most recent home that students built through the DesignBuildBLUFF program shows how they solve the challenge of building cheaply—and with style—where the summers are hot and the winters cold. With the help of a Housing and Urban Development grant linked through the Community Development Corporation of Utah, the students created a home for Dora and Baxter Benally, a Navajo couple, and some of their grandchildren. Presented with several design ideas, the Benallys chose a home in the shape of a wide arc, like a section of the circular wall of a Navajo hogan, but with an empty center. The inner curve of the house cups an outdoor living space, facing the bluffs. A sunken fire pit graces that space, an enormous iron bowl aged by years in the desert and salvaged by the students from a gravel mine on top of the mesa.



Although the Benally home site appeared to be flat, surveying revealed that it sloped down four feet from one corner of the house to the other. The students opted to excavate to level the site, solving the problem of slope but necessitating a retaining wall. They went to the Blanding, Utah, landfill and salvaged a truckload of old tires for a retaining wall.

The walls also rose from salvaged material. Nearby Blanding had 80 tons of rejected road base. The material had the perfect sand-to-clay ratio to create compressed earth blocks reminiscent of adobe.

Meanwhile, a combination of culturally specific design and the house's innovative shape helps cool the house. Because the Navajo have different ideas of privacy, Louis said, the students were able to install louvers throughout the house. The wind flushes the heat out of the house. "It's so narrow at the back, there's almost a canyon effect," Louis said.

Louis calls the problems his students have faced "thinking-making." These are the challenges that occur when architectural concept meets physical reality. Thinking-making actually got him into the profession of architecture to begin with.

He was living with his family in Costa Rica and they built a house together. Of that project he says, "We were way out in the jungle, without power ... We made the home mostly of concrete and local hardwoods, cut and milled ourselves from the forest ... We improvised just about every hour ..."

Louis loved the thinking-making process. He returned to the United States to study architecture at the University of Utah. Upon graduation, he opened Gigaplex and began teaching.

This year, architecture students designed a house reminiscent of a Navajo hogan for Dora and Baxter Benally of Bluff. The shape and strategically placed louvers allow the wind to sweep the heat out of the house in the summer.

Then Louis saw an article about the buildings created by the Auburn University Rural Studio program in Alabama, under the direction of Samuel Mockbee. Students designed and built striking and fanciful houses for poor rural families. They used recycled materials and straw-bale construction in technically and visually innovative ways.

Louis went to Auburn to learn from Mockbee. He says, "What I saw there was a lot of hard work—students who had abandoned the comforts of campus and home for a cooperative life and the opportunity to learn about architecture through action." It had a profound effect on him. "The crudeness of the materials juxtaposed with the thoughtful design ... absolutely blew me away."

Louis guides students through the design process during the fall semester and the construction during the spring. He provides information and support, and, as he says, he has veto power. After eight projects, his respect for the students is intense. "It's not an easy semester. We're working 8 to 10 hours a day, working weekends, we're in Bluff ... It's an entertain-yourself kind of place."

One of the original projects, the Kunga house at 64 Andrew Avenue (1500 South) in Salt Lake, made history for being the first straw-bale house in Salt Lake City to receive legal permits. It set the precedent that allows others to use this green building method within city limits.

PHOTO COURTESY OF THE UNIVERSITY OF UTAH COLLEGE OF ARCHITECTURE + PLANNING

Architect Hank Louis sweeps the roof of an earth home (left).

The "Sweet Caroline" house, shown above, uses a unique roofline.

The "Rosie Joe" (below left) house has a second roof to provide shade and collects rain water to fill the cistern.

In a neighborhood of small, brick single-family homes and duplexes, the Kunga house is a large home with an earth-plastered and metal exterior. Despite its differences from its neighbors, it fits graciously into its neighborhood. A clever one-and-a-half-story porch roof makes the house appear smaller than its size and provides an inviting shaded terrace. The Kunga family's Buddhist shrine room extends from a front corner, its vertical windows and flat roof reminiscent of temple architecture in the Himalayas.

In 2004, Louis's students built the award-winning Rosie Joe house on the Navajo Nation. The site is totally off the grid, without running water or electricity. Its rammed-earth walls are made of local soil. It has a double roof—a flat lower roof that provides insulation, and a butterflied upper roof, with the low point in the center. The second roof provides shade and collects rain water, filling a cistern for non-culinary household use.

The effect of the butterflied roof is striking and joyful. In summer it keeps the inside of the house much cooler than the outside temperature. But not everything DesignBuildBLUFF students create works exactly as planned. The water cistern for this house freezes if the water level gets low during the winter. Project participants will solve that problem by burying the cistern.

Mistakes, in fact, have happened frequently, and they bring learning opportunities for the students and teacher alike. Louis recalled the details of one of the larger miscalculations—on one house, the students wanted a translucent wall and designed two sheets of acrylic filled with straw. But the acrylic cracked, the straw sank, and water got in and molded the straw. Instead of getting a bad grade on a project and moving on with their lives, the students reacted by banding together and doing it over—long after the class was over.

"They went out and got all the materials donated ... They all gave up their time at work to come down for a week and redo those walls. That's how committed they've become to these families," Louis said.

It's a real-world education, and Louis says he's learning something every day too. "That's probably why I do it." WJ

Linda C. Peer is a sculptor, writer, and skier who divides her time between Utah and New York City, where she is a professor of fine arts at the Fashion Institute of Technology. She received a 2006 Utah Arts Council award for short fiction. She plans to build a green home in central Utah.