

invention **mention**

by Lauren M. Whaley

Local inventor bends bamboo for revolution

Josh Doolittle, artist-cum-inventor, can barely speak fast enough to spit out his bazillion ideas. His sage-colored eyes brighten as he spins them off – green building design, climbing areas, emergency shelters, technical clothes, and his newest idea: “Chi’Bagoda” bamboo architecture.

Combining technical training with a strong environmental ethic, the Rhode Island School of Design alumnus and Colorado native says bamboo presents a viable solution to preserving natural resources. He calls bamboo the “ultimate renaissance material” that can save the environment and help the needy, promoting cheap, sustainable living. Doolittle’s plan involves creating structures that “salvage our global environment,” he said.

Bamboo tends to crack when harvested, which is actually a good thing. Breaking the bamboo poles down into strips creates a stable structural element. Doolittle says these strips can then be banded or laminated to create the structural elements of whatever you are wishing to create: a five-story urban building in Sao Paulo, Brazil, or a 100-foot diameter, solar-powered greenhouse dome to provide a consistent climate for drought-stricken Africans.

The circular “Chi’Bagoda” domes at the center of his plan begin with composite bamboo ribs attached to a central hub. The mushroom form is constructed of composite bamboo strip bundles and structural supports. The frame is then sheathed with a layer of woven bamboo mats, followed by a concrete or adobe stucco skin. Passive solar systems can then supplement standard plumbing and electrical systems.

Although he dreams of spreading the idea worldwide, Doolittle first hopes to build a prototype through Bamboo Technologies’ facility in Vietnam.

The bamboo shoot

According to bambocentral.com, bamboo is the fastest growing plant on Earth. It produces greater biomass and 30 percent more oxygen than a hardwood forest on the same area, while improving watersheds, preventing erosion, restoring soil, providing sweet edible shoots and removing toxins from contaminated soil.

Bamboo timber can be harvested every year after seven years, compared to 30 to 50 years for trees. It can also be selectively harvested annually and regenerates without replanting.

With a tensile strength comparable to steel and a weight-to-strength ratio surpassing that of graphite, bamboo is the strongest woody plant on Earth. Its 1,500 species thrive in diverse terrain from sea level to 12,000 feet on every continent but the poles.

“The bamboo grove is a giant rebar factory,” Doolittle said, explaining how durable yet cheap the natural material is.

Doolittle said Vietnam has about 200,000 square miles of bamboo forests. Bamboo feeds people, houses them, and provides raw materials for utensils, weapons, baskets, ropes, hats and many other practical and spiritual uses.

“It’s clear that this idea has been successfully implemented in various forms,” he said. “The Mesopotamians built Quonset huts like tea houses, using a banded swamp reed technique to form giant structural hoops. Many Iraqi buildings [like this] have been standing for 3,000 to 5,000 years. The South Iraqis of today still build dwellings using this system.”

The bamboo frame system remains pervasive throughout Asia and Polynesia. Despite how widespread they are, however, bamboo dwellings are looked down upon in many societies.

“The trend with bamboo homeowners throughout the world is to rebuild with lumber or cinder blocks once they can afford to do so,” Doolittle explained. “They do this, because ... they want to rise above the negative stigma of living in an abode built with the ‘poor man’s building material.’”

This western trend, Doolittle said, is non-sustainable and will ultimately lead to further destruction.

With his Chi’Bagoda project, then, Doolittle is doing more than simply building. He’s proposing a



ANDREW WYATT

Josh Doolittle constructs his Chi’Bagoda bamboo prototype at the base of SnowKing.

paradigm shift into what he calls “future primitive,” a movement that allows modern people to simplify their lives and reconnect to their landscape.

Start of a dream

As a teenager, Doolittle worked on construction crews in Colorado with climbers who waxed eloquent on environmental decimation. While in Colorado, he dreamed Eldorado Canyon was inhabited by a colony of circular dome huts. Chi’Bagoda is a manifestation of that dream.

“I am also into Buddhism, Taoism and Eastern philosophy,” Doolittle said. “The pagoda is a Buddhist temple that generally has a stacked arch.”

In addition, Doolittle has been studying a 3,000-year-old form of Tai Chi for the past eight years. “So ‘Chi’Bagoda’ is a fusion of ‘Chi’ and ‘pagoda,’

‘Inventor’ continued on next page ...

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Gifts that keep on giving

Now that Thanksgiving is over and the focus turns from gratitude to giving, why not let your gifts benefit the planet and organizations working to make a difference? There are many possibilities for the person who has everything. Giving a gift of service can benefit communities around the world and keeps on giving throughout the year.

Several organizations offer “gift certificate” programs. Here’s how it works: You decide on what dollar amount you want to spend, contact the organization, and they send a gift card to you or your recipient telling them a gift has been made in their name.

The Seva Foundation was one of the first organizations to come up with this idea and has many programs to choose from. You can gift a cataract operation to a grandmother in Nepal, or help fund a community garden in a Native American community. Contact www.seva.org to choose from a myriad of gifts to benefit peoples all over the world.

The Community Foundation of Jackson Hole has a program called “The Perfect Gift.” You can make a contribution of \$25 or larger; the person in whose name you make the gift then has a year to decide which nonprofit – local or anywhere in the U.S. – they would like to benefit. It is a win-win all the way around: You don’t have to spend hours shopping, your gift can

benefit any nonprofit in the U.S., and your gift is tax deductible. Visit www.cfjacksonhole.org, click on “Make a Gift,” then choose “The Perfect Gift,” or call 739-1026 ex. 101.

Oxfam America (www.oxfamamerica.org) also has a program that offers gift certificates and can direct you to purchasing “Free Trade” items, which benefit low-income communities and ensures that the person who made the item is paid a living wage and works in healthy working conditions.

Finally, at www.realgoods.com, you can order an eco-toy, which will help send 50 disadvantaged youths to an Earth Day Festival, teaching children to be stewards of the natural world. Choosing gifts that benefit others is good for everyone!

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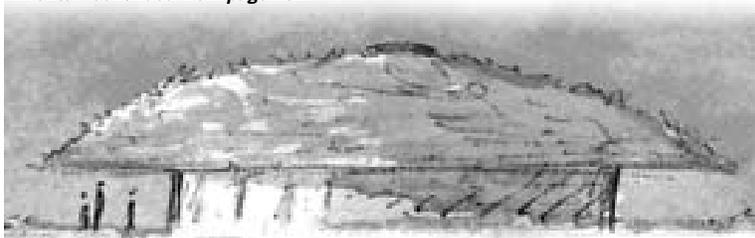
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'Inventor' continued from page 15...



JOSH DOOLITTLE

The Inventor's Studio

In addition to Chi'Bagoda, Doolittle is also:

- Redesigning a belay jacket for a local clothing company – a mutation of existing fabric, waterproof, breathable fabric, and a wrist closure/pit zip.
- Redesigning the Camelback system
- Designing artificial boulders and skate ramps in public areas
- Making watercolor paintings of Teton landscapes for a local real estate agency

but Chi'Bagoda has a better ring to it than Chi'Pagoda."

Bamboo itself represents the dichotomy of wealth and nothingness. It is also quick growing, high, straight and very strong, qualities that present not only a high-quality building material, but also something spiritual in traditional Chinese culture, something that symbolizes positive human qualities.

Seeking advice, ideas and funding, Doolittle has tapped resources in Burlington, Vt., Boulder, Colo., Ventura, Calif., Portland, Ore., Maui, Hawaii, Providence, R.I., and now Vietnam and Saigon.

With the help of many people – his primary teammates are Zak Rosser, whom he met at the Brew Pub one night, and Mike Gestwick, whom he met during an "afternoon art adventure" around Moran, but aid has come from RISD professors, Vietnamese bamboo farmers, his Tai Chi instructor Greg Brazelton, and Teresa Griswold and Steve Crafts who did some graphic design work for the project – Doolittle has created a "patentable building material that is an organic, sustainable expression of steel rebar, but much easier and lighter to work with since you can use standard carpentry tools and fasteners," he said.

The Chi'Bagoda design recently won an honorable mention in the sustainable development Pangaea Institute Design Competition and was included in "Emergent: New Directions in Sustainable Art and Design," hosted by Doolittle's alma mater.

"The competitions are really getting this project moving," Doolittle said.

Gimme shelter

In addition to building homes and offices, Doolittle hopes the Chi'Bagoda design can be used for emergency shelters. These lighter, fabric-skinned domes could be mass produced.

"They could be shipped to disaster areas to be used as temporary but long-term emergency housing, storage, clinics, meal areas, etc.," he said.

"The bamboo Chi'Bagoda would not only provide a more affordable, sustainable and culturally appropriate response to the housing crisis, but also a structural system that has proven to be highly earthquake resistant."

He claims that bamboo structures in Columbia and Costa Rica have survived 7.2 and 7.5 magnitude earthquakes while surrounding cinderblock dwellings collapsed.

"The bottom line is that with some tinkering, we should be able to build just about anything,

but the one optimal theme is to incorporate arcs to gain the added structural integrity that occurs when material is put in tension," he said. "This is the same premise behind dome tents."

Inventing a future

After researching, drawing and talking to as many people as possible for about eight months, Doolittle estimates his full-scale prototype will cost \$8,000.

"We're pretty confident this is going to work," he said. "This could turn into developments all over the world, for the Indonesian fisherman to upscale Jacksonites and everything in between."

Eventually, after building his prototype in Asia, Doolittle hopes to gain access to Vietnamese and Venezuelan bamboo groves and turn Chi'Bagoda into a business.

"The Chi'Bagoda vision is to also operate a nonprofit division that would be busy promoting and teaching this idea in the economically emerging nations of the world, many of which already have abundant bamboo sources," he said. "This is extremely crucial if our planet is going to survive, and us with it."

Moving a mile a minute, designing and pontificating, telling anyone who will listen, this local inventor continues to spin. If you see someone scribbling furiously in Pearl Street Bagels or the library, it is likely Josh Doolittle planning his next project or scheming ways to come up with the money to see his dreams turn into reality.