

Globe

THE
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PLUS:
Pearl Visions, Pizza for Dogs, Michelle Damon Takes

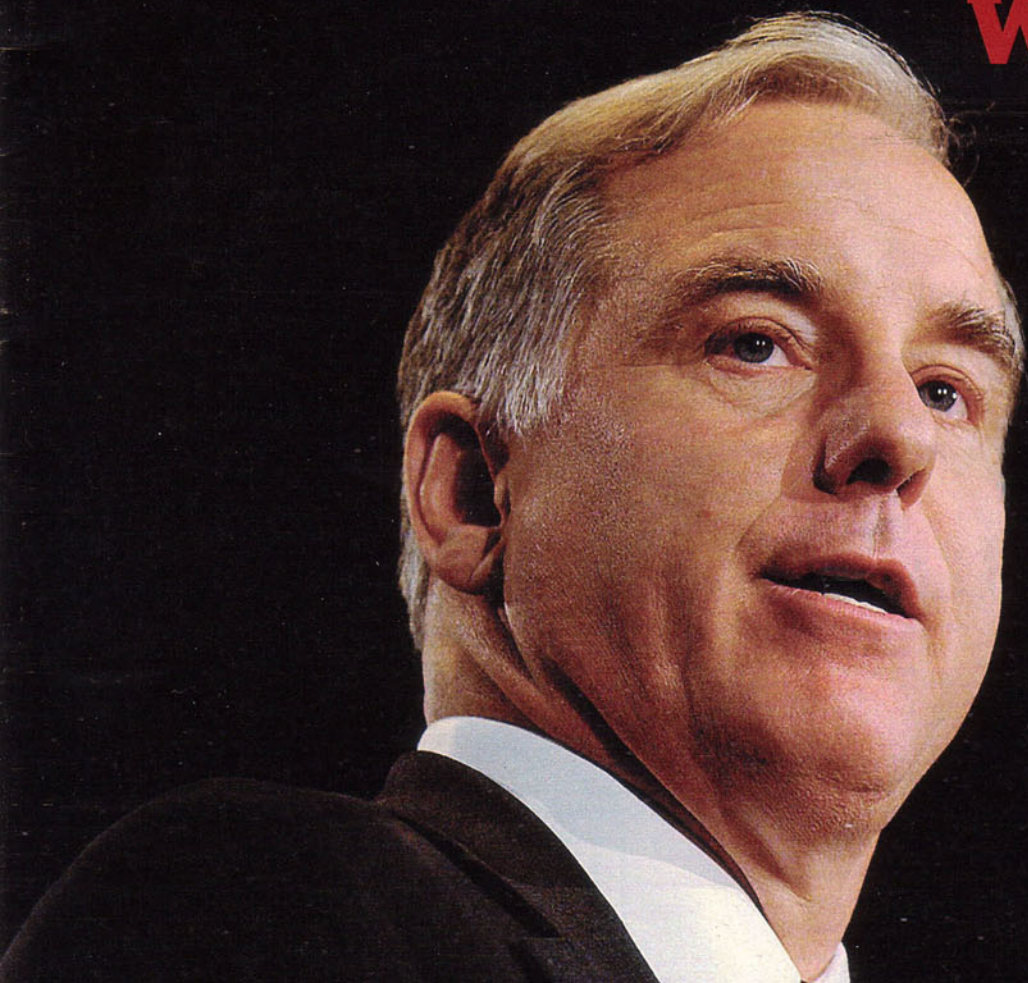
07.24.05 /// MAGAZINE

He went from Vermont governor to presidential front-runner to political afterthought. Now Howard Dean is back, as Democratic Party chairman, feistier than ever and talking up a storm. The question is: Who's listening?

Rebel

With a Cause

By Charles P. Pierce



A Safe(r) Place

After a tidal wave leveled Sri Lanka, a team of designers from Harvard and MIT brainstormed to help the survivors make their new homes safer.

FOR SALE, SRI LANKA: BEACHFRONT HOME, 2 BEDROOMS, EAT-IN KITCHEN, OPEN LAYOUT. ENJOY WARM INDIAN OCEAN BREEZES. \$1,200.

NO, THAT'S NOT A TYPO. IN THE WAKE OF DECEMBER'S disastrous tsunami, it's what a Massachusetts Institute of Technology-Harvard Design School team of architects and urban planners estimates it will cost to build a house that can better withstand the kind of catastrophic tidal wave that killed an estimated 50,000 people in Sri Lanka and displaced 900,000.

Though cheap by New England standards, the price represents 18 months of per-capita income in the South Asian island nation of 20 million people. Still, the Tsunami-Safe(r) House is designed to cost no more than the standard Sri Lankan concrete-block home.

"We use exactly the same cubic meters of material, just in a new configuration," says project leader Carlo Ratti, an MIT architecture and urban planning professor. Ratti had been in

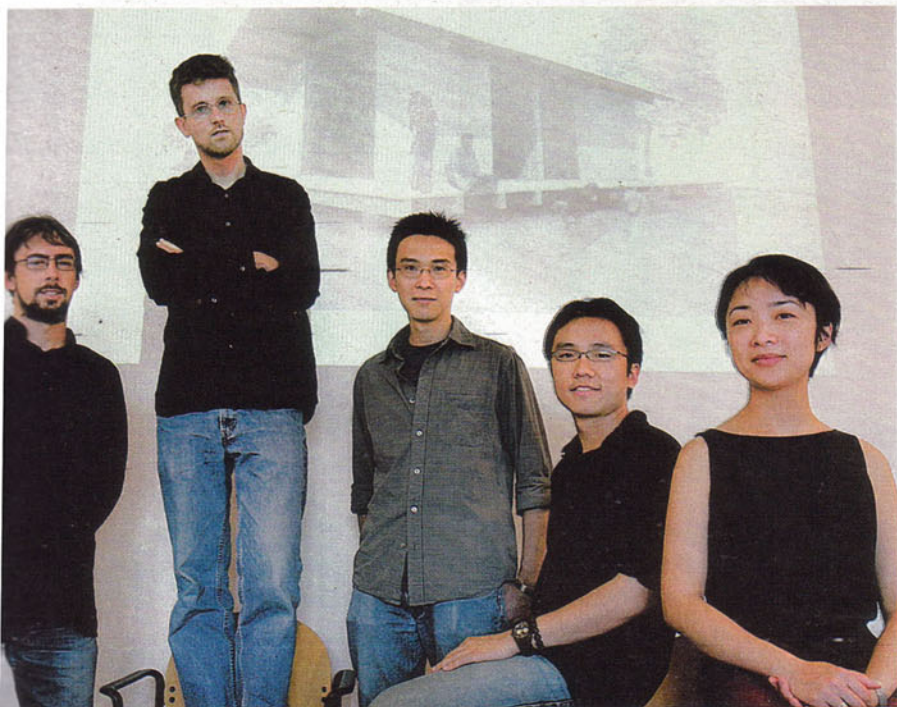
Sri Lanka for the wedding of a Cambridge University friend and left just one day before the tsunami hit. "When I landed in London, my cellphone was jammed with messages saying, 'Are you OK?'" Knowing that "I could have been there," says Ratti, inspired him to help the survivors.

After observing what kinds of structures made it through the tsunami, Ratti and the MIT-Harvard team came up with a plan. It uses the same number of concrete blocks that it takes to form four walls but instead of placing them in conventional straight lines, they are used to form four boxy columns. The house is then sited so that the columns' narrower edge faces the sea. Walls made of woven bamboo, wood, coconut fiber, or other flexible materials attached to the columns in various configurations serve to divide the space into rooms. The design also calls for the house to be set on a platform, so that the floor is 2 feet above the ground.

Computer simulations by structural engineering consultants Buro Happold in London showed the Safe(r) design could withstand a tsunami five times as strong as what a conventionally designed concrete-block house could tolerate. If another tsunami hits, "the houses will be damaged because the water will flow through them — there's no way around that," Ratti says. However, it is far more likely that the core of the building would be left standing.

One goal of the MIT-Harvard team is to help save Sri Lankan fishing communities. Since 4 out of every 5 miles of Sri Lankan coastline was inundated by the December wave, the national government has been pushing to create 110-yard coastal buffer zones. That would mean thousands of people, most of whom make their living from the sea, would have to relocate. Many Sri Lankans have protested, suspecting the government's buffer zone is a pretext for clearing out beachfronts to make way for vacation resorts.

MIT's Buddhist chaplain, Tenzin Priyadarshi, working with a campus foundation called Prajnopaya, hopes to raise enough money to build 1,000 prototype Tsunami-Safe(r) Houses. The project would show that shorefront construction can be safer, and also would involve residents in perfecting the design. "We want the community brought together by local partners to engage in the process of construction," says team member Eric Ho of Harvard's Tsunami Design Initiative. "Our objective is to help the people help themselves." **EG**

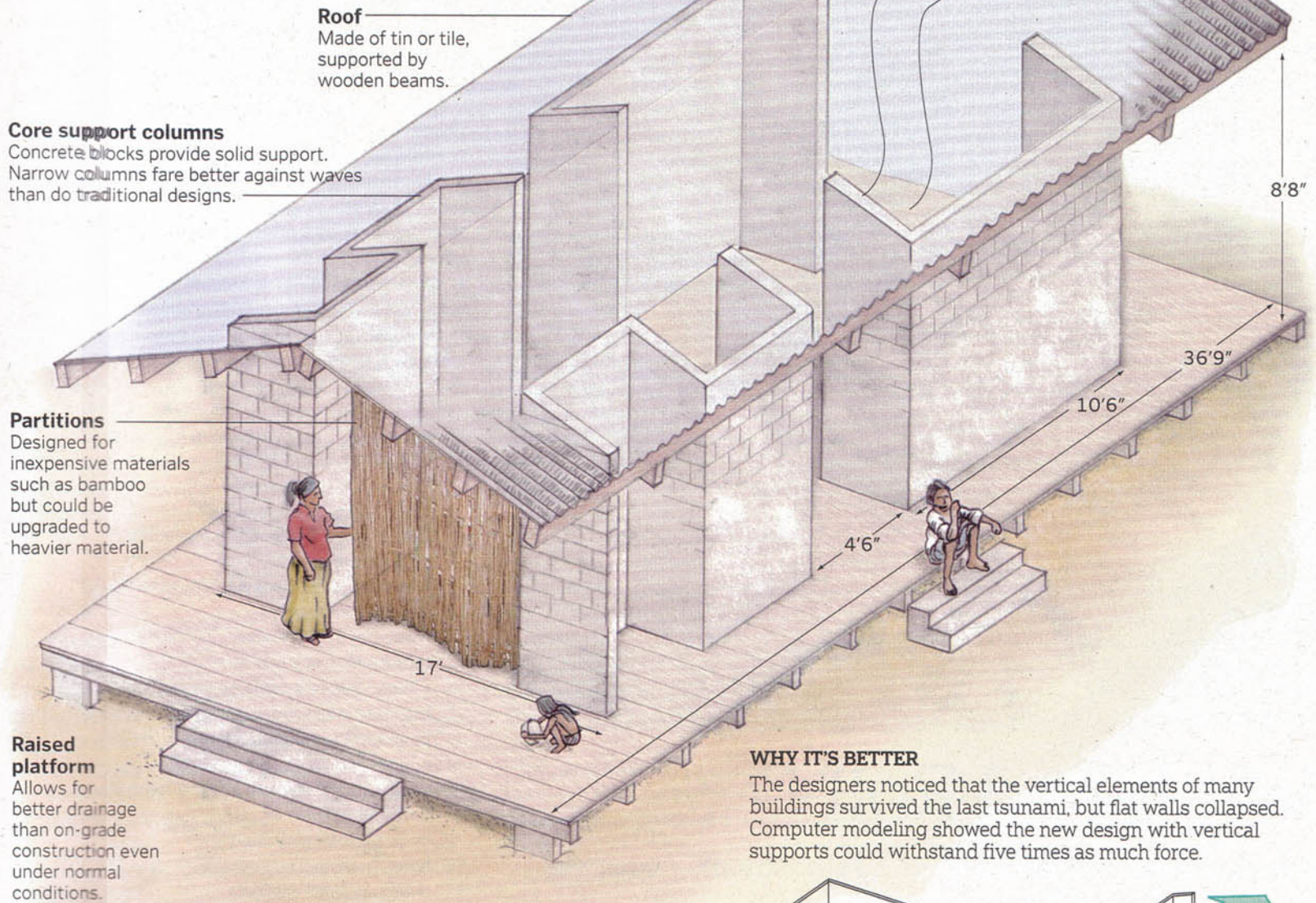


PROJECT TEAM MEMBERS, from left, Walter Nicolino, Carlo Ratti (project leader), Rick Lam, Eric Ho, and Ying Zhou, in front of a computer model of a Tsunami-Safe(r) House.

Peter J. Howe is a Globe business reporter. He can be reached at Howe@globe.com. For online information on the MIT-Harvard Tsunami-Safe(r) House project, go to <http://senseable.mit.edu/tsunami-prajnopaya/>.

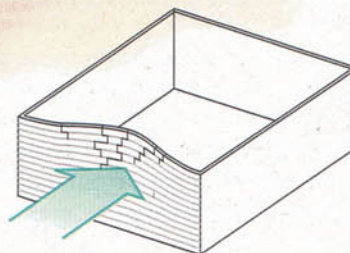
Home Improvement

A team from MIT and Harvard has designed houses to replace those destroyed in Sri Lanka by last year's tsunami. The new design can be built with traditional construction techniques and materials but is designed to better withstand storms and tsunamis.

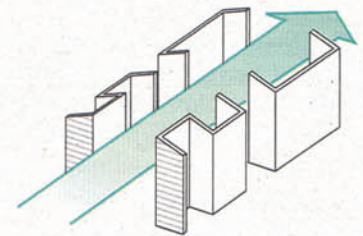


WHY IT'S BETTER

The designers noticed that the vertical elements of many buildings survived the last tsunami, but flat walls collapsed. Computer modeling showed the new design with vertical supports could withstand five times as much force.



OLD: Force of wave knocks over wide masonry wall.



NEW: Columns with narrow side facing ocean have more support and present less resistance to incoming water.

Flexible floor plans

Modular design allows many configurations and is easily expanded.

