Serendipity: Designing for Sustainability

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It was just a platter of time before social engineering and design skills cooked up a solution to a vexing problem in Ethiopia.

What do mitads — clay cooking surfaces — have to do with sustainable economics? Ethiopian women use these platter ovens, rested on three stones over a fire, to cook their daily staple: injera. The fragile mitads break frequently, costing poor Ethiopians about 10 percent of their annual household income. But now these and similar economic problems are beginning to be tackled by budding entrepreneurs in graduate school.

The simple beauty of economics rests at the intersection of the supply and demand curves, where the market dictates a good's efficient price and quantity. But this graph is also the Achilles heel of economics. It has nothing to say about consumers who fall short of the curve — who don't have enough money to "demand" basic necessities. Providing for this niche market has eluded the interest of inventors and venture capitalists. That's why designing for sustainability is an exciting and unstoppable idea.

At a recent event orchestrated by my alma mater, I learned about a class co-taught in the business and the graduate engineering schools called Entrepreneurial Design for Extreme Affordability. (I would so take that class if I were back in Stanford's engineering department today!) The goal is human-centered design in which the future users are from a vastly different life experience than the students. The design process in this case takes a great deal of hands-on experimenting.

The group of students that solved the mitad problem spent its first five days in the Ethiopian countryside talking to villagers about their biggest problems. They asked

people about their most prized possessions. They listened and took notes, but failed to find a problem for which a design solution was appropriate. Returning to the village, they finally noticed that each hut had at least one broken mitad. Their design project was born.

The ultimate solution was to fashion a thin sheet-metal band around the mitad, clamping it tight with a locking screw. When the villagers gathered around to test the new design, a video camera captured the awe-inspiring event. A skeptic dropped the mitad from a few feet off the ground, not trusting that it would remain whole. It did. He gradually lifted it higher and higher, and the growing crowd around him laughed in amazement at each thud of the mitad into the dust. Finally someone was able to break it by throwing it as hard as he could.

This successful trial was the culmination of the two-quarter course hosted by the Stanford Institute of Design. Multidisciplinary graduate student teams combine business, technology and human values to design products for the developing world. Several of the projects already have resulted in the establishment of for-profit and not-for-profit organizations.

Integrating the new design required social engineering as well as design skills. The students worked with the mitad manufacturers, who had the reputation of used-car salesmen because their products broke so easily. They also worked with the village leaders to make the transition seamless.

“The idea is very, very good. We will accept it,” said Osura of the Wando Genet village. The result is more than just a great magic trick for satisfied customers. As family after family responded when asked how this would change their household, “With what we save each year, we can send one child to school.”

Click here to learn more.

Karen Telleen-Lawton’s column is a mélange of observations supporting sustainability. Graze her writing and excerpts from Canyon Voices: the Nature of Rattlesnake Canyon *at www.CanyonVoices.com.*