What's Next
Coding a Better World
By Suzie Boss

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FOOD

Delivering the Goods

▶ When the My Street Grocery truck pulls up in front of a low-income housing complex in Portland, Ore., neighbors make their way curbside to shop for fresh produce or buy meal kits that will feed a family of four cheaper than a fast-food restaurant. Across the country in Atlanta's Castleberry Hill neighborhood, business is bustling at Boxcar Grocer, where the corner convenience store has been updated with farm-fresh produce, healthful snacks, and high-concept design.

Entrepreneurs are setting up shop in the nation's urban food deserts, expanding options for a market that has been overlooked by traditional grocers. "We want to create a prototype that will serve multiple community needs," says Boxcar co-founder Alison Cross, who started the store with her brother, Alphonzo Cross. Despite their social good aspirations, they have deliberately steered clear of the nonprofit model. "To create change," she says, "we need to prove that this can be done for profit."

My Street Grocery also operates as a for-profit social enterprise. Founder Amelia Pape says she started planning the business while earning an MBA from Portland State University. One of her first class assignments was to identify a market failure and devise a solution. She focused on food deserts, defined by the US Department of Agriculture as low-income neighborhoods where a substantial portion of the residents live more than a mile from a supermarket. Despite Portland's reputation as a foodie haven, the city has its share of neighborhoods with few healthy food options.

To reduce overhead and serve more neighborhoods, Pape and her two co-founders settled on the mobile grocery model. Another mobile grocer—Fresh Moves—delivers to Chicago's Englewood neighborhood in a retrofitted city bus.

Pape and company tested their idea last fall by setting up temporary food stands in several low-income neighborhoods. The pilot demonstrated demand. Using Kickstarter, the online fundraising platform, they raised more than $10,000 in contributions to buy and refurbish their first truck.

Both enterprises make consumer education part of their business model. My Street Grocery works closely with Oregon State University Extension to connect customers with cooking classes and offers culturally appropriate recipes. Ready-made meal packs include recipes along with premeasured ingredients like whole wheat pasta, fresh green beans or spinach, and canned tomatoes. My Street Grocery is also seeking approval to accept food stamps. That means navigating regulatory challenges, Pape admits, "but it's something our customers want."

Boxcar Grocer owners Alison and Alphonzo Cross updated an Atlanta convenience store to sell health food .

Boxcar Grocer has developed a network of urban farmers who rent six indoor market stalls to sell their produce directly to customers. The Boxcar brand is a nod to the neighborhood's many railroad warehouses and also connects with cultural history. "Trains are great connectors. The store is an immediate way to make the connection between urban and rural land. We're helping people realize that there are still black farmers," says Cross, who is African American. "For many people in our generation, our parents left the farms and never looked back."

Business has been growing faster than the brother-sister team expected. Their brick-walled store—which feels more like hip bistro than mini-mart—is appealing to a wider demographic than they envisioned. "Health food stores don't cater to people who look like me," Cross says. "We have an opportunity to market to people nobody's marketing to." Their biggest competitor, Cross adds, isn't Walmart. "It's McDonald's, KFC, and Burger King. How do we change the mindset of a generation of upwardly mobile people who think that taking your kids to McDonald's makes you a good parent?"

Food tastings are just one way they're reaching out to new consumers. "Many people think healthy food is elitist, upper income, and white," Cross says. With free samples of kale salad and other tasty snacks, she's hoping to take a bite out of that misconception. ∎

PHOTOGRAPH BY CHRISTOPHER OCTA

HEALTH

Virtual Models for Real Issues

▶ When facing a pandemic or other health threat, public health decision makers have a host of what-ifs to consider. What if we run out of hospital beds? What if we close schools or workplaces? What if the virus mutates?

Dr. Bruce Lee, assistant professor of medicine, epidemiology, and biomedical informatics at the University of Pittsburgh, provided an unusual service during the last H1N1 outbreak. Embedded at the US Department of Health and Human Services, Lee was on call to model situations that had decision makers concerned. Using a high-powered computing platform that he compares to game worlds like SimCity, he was able to provide visualizations of different scenarios so that decision makers could better weigh their responses to changing information.

"People can get lost in numbers. But if you show them something with a striking visualization, they perk up. It gets their attention," says Lee. Modeling also improves communication among specialists who may have different areas of expertise. When medical experts and policymakers have to reach decisions based on best available information, "a picture really is worth a thousand words."

Using an approach called agent-based computational modeling, Lee and his colleagues work with a virtual population lab that can mimic actual population patterns in a specific part of the world or even globally. Using US census data, for instance, they can run simulations to show how different health scenarios would affect the nation's 100 million households.

One project underscored the importance of treating low-income populations first to achieve benefits across society. Poor people tend to use public transportation and travel greater distances to work than more well-heeled populations, making them more likely transmitters. "Moral and ethical arguments are effective when you want to work for some type of social change," Lee says, "but sometimes it's even more effective to have a utilitarian argument."

Lee, who has an MBA and an MD, leaves it to others to suggest which questions to analyze. "My interest is using modeling to address real-world questions. We work closely with decision makers to understand, what are the questions they need answered? What are the challenges to answering those questions?" He is also part of a network of modelers known as MIDAS, for Models of Infectious Disease Agent Study, started by the National Institute of General Medical Sciences (NIGMS) in response to 9/11 and associated health threats.

Agent-based modeling is an increasingly useful tool to analyze a range of public health issues, including bioterrorism threats. "The limitation is how quickly people can be trained to use these tools," says Dr. James Anderson, program director of the Division of Biomedical Technology, Bioinformatics, and Computational Biology at NIGMS. Anderson says the greatest value for modeling comes at the planning stages, "when you can think about something that hasn't happened yet."

Still relatively new, agent-based modeling requires both powerful computers and specialized understanding. Lee credits his modeling skills to an interest in gaming that dates to his youth, followed by business school classes in modeling and business analysis, and then a stint at Quintiles, a clinical research organization, where he did economic modeling for big pharmaceutical companies.

Lee and his colleagues are currently studying vaccine supply chains in a project for the Bill & Melinda Gates Foundation, and also collaborating with UNICEF and the World Health Organization. "People who need vaccines the most are sometimes the last to get them," Lee says, "especially if they're in remote areas or underserved populations. Models can help inform decision making about the best way to get vaccines to people." ■

CORPORATE SOCIAL RESPONSIBILITY

A Lifeline for Mothers

▶ Despite the United Nations Millennium Development Goal to reduce maternal deaths by three-quarters, the world continues to lose about 1,000 mothers a day. Most die from hemorrhage, high blood pressure, and other preventable complications of pregnancy and childbirth. Merck for Mothers, a 10-year, $500 million initiative launched last fall by the pharmaceutical giant, aims to improve the odds for vulnerable women around the globe.

"We want to bend that curve back to where it needs to be," says Julie Gerberding, president of Merck's vaccines division, who serves on the steering committee of Merck for Mothers.

The scale of the new initiative "is certainly staggering—a positive signal to the whole field," acknowledges Meg Wirth, founder of Maternova, a social enterprise that aims to improve maternal and neonatal health. "It adds to the growing recognition of how serious this problem is and how many different players it will take to overcome the issue of maternal mortality." Wirth, who spent 15 years working on global maternal health policy issues, adds, "When the announcement was made, everyone gasped—and then asked, what will it be spent on?"

To answer that question, Merck is investing first in active listening. Gerberding says the company's initial step was to reach out to the United Nations,

A health worker at a rural Ugandan facility prepares to administer medicine to mothers and children.

which under Secretary-General Ban Ki-moon's leadership has started an ambitious maternal and child health campaign called Every Woman Every Child. "Rather than thinking up a project on our own," says Gerberding, "we asked the UN how Merck could be most helpful in accomplishing its goals."

Conversations with those on the front lines have helped Merck understand challenges in parts of the world where big pharma companies currently have little impact. "We want to reach that 80 percent of the world's population that global health companies don't currently reach," Gerberding says. Merck for Mothers will focus on new product innovation, accelerating access to proven solutions for issues like preeclampsia and postpartum hemorrhage, and improving access to prenatal care and family planning services, along with ongoing advocacy efforts.

When it comes to product innovation, a team of research scientists is working to develop a heat-stable compound to treat hemorrhage during labor and delivery. A product that could be used in resource-poor conditions, without needing refrigeration, to treat one of the leading causes of maternal death "could be a game changer," adds Wirth.

At the same time, the initiative is looking to leverage Merck's expertise to speed the development and distribution of already existing products. One of the first grants awarded will enable PATH, a global health nonprofit, to evaluate more than 30 technologies that show promise for treating preeclampsia and postpartum hemorrhage. Merck researchers are collaborating with PATH on the $2.5 million project.

New public-private partnerships are likely to emerge around the globe. "We're talk-

ing with heads of government, NGOs, and others to see if we can't come up with ideas that would be relevant to their unique epidemiology," says Gerberding. "Not everything is going through the UN or the US government. We're trying a variety of models of engagement," in countries as diverse as Zambia, Brazil, and India.

One nonprofit leader suggests transparency will be important as Merck for Mothers makes funding commitments and evaluates results. The initiative website (merckformothers.com) will be "a hub of information" as the program ramps up, Gerberding says. "Our full dashboard of metrics is being developed now." Results in partner countries will be tracked closely, along with overall impact.

"It's important not to gloss over how big this problem is," Gerberding adds, "but fundamentally, we want to help achieve the Millennium Development Goals. That's why we got started down this path." ▪

Coding a Better World

▶ For lawyers or doctors eager to lend their professional energy to good causes, it's fairly straightforward to find pro bono opportunities. But what if your work involves writing code or fixing bugs? Software developers, technical writers, and other IT professionals who want to volunteer may not know where to begin looking for causes that make use of their expertise.

SocialCoding4Good (SC4G) aims to fill this gap by developing an online platform to match skilled employees from the technology sector with causes that need technical help. An initiative of Benetech, a nonprofit

pioneer in leveraging technology for social good, SC4G focuses specifically on open-source projects that address humanitarian issues. Known as HFOSS for humanitarian free and open source software, such projects are proliferating to address causes ranging from human rights to global literacy.

"Open-source projects are perfectly suited to volunteers," explains SC4G leader Gerardo Capiel, vice president of engineering for Benetech. The open-source Firefox browser, for instance, has been developed and improved by thousands of volunteers collaborating from around the world. Why not do the same, he reasoned, to speed the development of innovative tools to protect human rights workers, improve food supply chains in drought-stricken regions, or achieve other social benefits?

Seed funding from the Knight Foundation through the Silicon Valley Community Foundation has enabled SC4G to launch a pilot with HFOSS "sister organizations," as Capiel describes them. Although not formally connected, organizations such as FrontlineSMS and Benetech are like-minded when it comes to using technological innovation to solve tricky social and environmental problems. They also need more extended volunteer engagement than a weekend-long burst of hackathon energy.

The Guardian Project, for example, is building tools on the Android mobile platform to ensure safer communication channels for those working under high-risk conditions. "These tools make secure communication possible in sensitive areas," explains Guardian's Derek Halliday. Having a safe way to gather and send information via mobile device, protect online contacts,

or just keep your web browsing history private can be a lifesaver for human rights workers, journalists, health workers, and citizen activists in political hotspots.

The Guardian Project's work has attracted grant funding and government support, "but we don't have the funds to really ramp up resources," Halliday says. Developer headcount runs to "the tens," he estimates, rather than hundreds. Through SC4G, Halliday is anticipating an influx of highly skilled technical innovators to advance the Guardian Project's cutting-edge mobile tools on a limited budget.

On the other end of this equation, technology companies see SC4G as a way to offer employees new opportunities for skills-based volunteering. VMware, a global cloud virtualization company based in Palo Alto, Calif., is the first to commit to the initiative, giving each employee five paid days per year to devote to "causes they care about, things that are closest to their hearts," says Nicola Acutt, director of the VMware Foundation.

Through SC4G, VMware's global workforce of 12,000 "can leverage their specialized skills to have a bigger impact," Acutt predicts, "and find opportunities that spark their passions." What might software engineers gain in return? "Leadership experience, working in new situations—there's a whole host of potential soft skills," she adds.

SC4G is developing its own tools to fine-tune matching opportunities between HFOSS projects and interested volunteers. "We want to pair up the right developer with the right project," Capiel says. "We're breaking projects into small bits so that it's easy for lots of people to collaborate." ▪