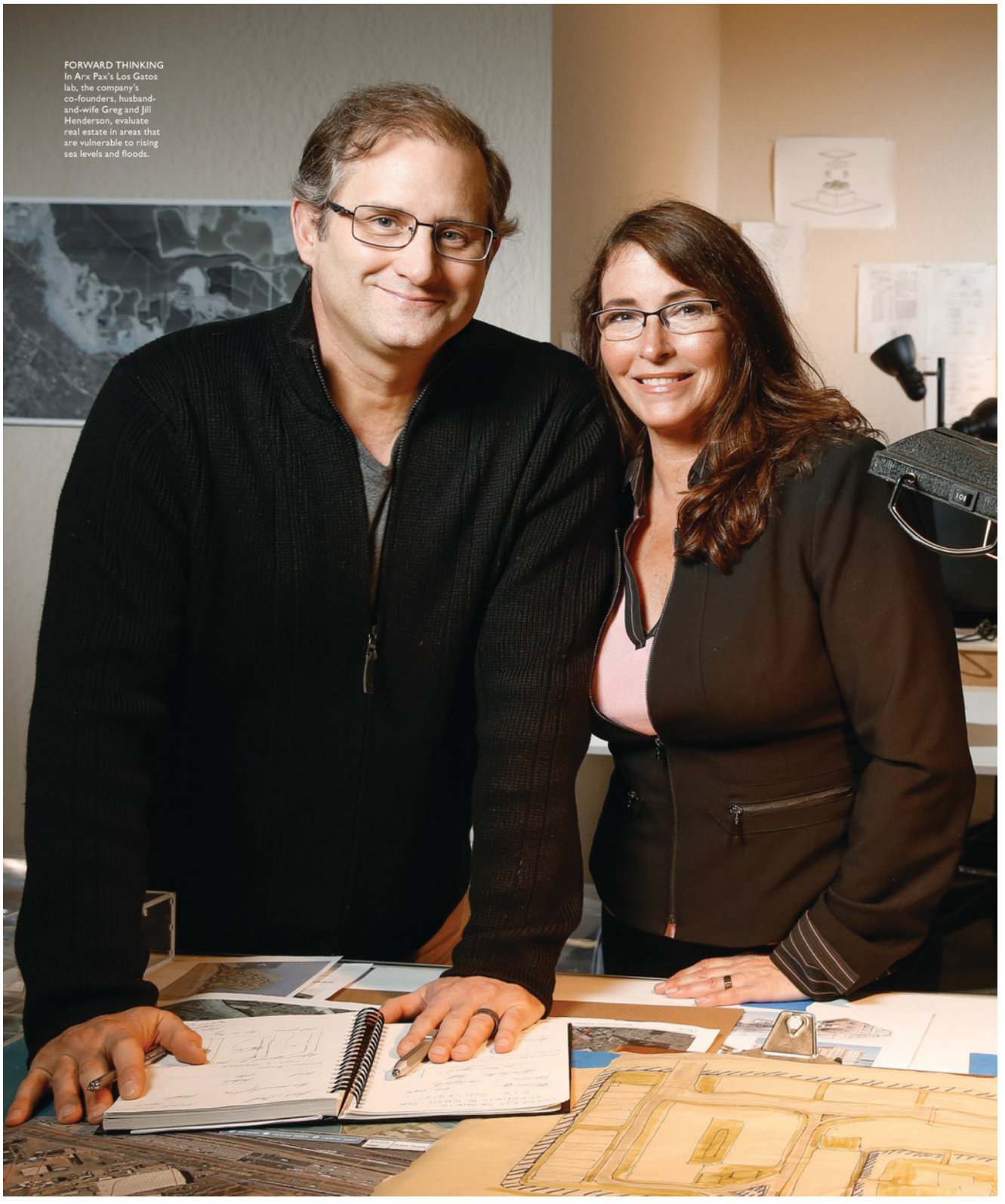


FORWARD THINKING
In Arx Pax's Los Gatos lab, the company's co-founders, husband-and-wife Greg and Jill Henderson, evaluate real estate in areas that are vulnerable to rising sea levels and floods.



A STARTUP (AND LOVE) STORY

He had a head full of plans to change the world. She had business sense and drive. For Greg and Jill Henderson, co-founders of Arx Pax, it was love at second sight.

BY CHRIS O'BRIEN // PHOTOGRAPHY BY CRAIG LEE

As romantic stories go, the tale of Greg and Jill Henderson begins in a way that only a love story set in Silicon Valley can begin: About a decade ago, the two acquaintances, who had met 20 years earlier at Saratoga High School, were talking about Greg's dream-like vision for reinventing the construction industry. Greg rushed to explain the engineering logic of how he could save the planet with a revolutionary system that allowed buildings to float above land and water, that would protect them from natural disasters like earthquakes, flooding and, eventually, global warming. It was the kind of feverish rambling that often left friends and family shaking their heads.

Not Jill. She listened intently. And then she very firmly told him it was time to stop dreaming and time to start doing. Start filing for patents. Start writing a business plan. Start figuring out how to raise money. Jill mapped out a series of practical steps that led her to a surprising conclusion. "I didn't ever think about liking Greg all those years," Jill says. "But once we reconnected, we knew we were going to be together forever."

A byproduct of their reconnection is their company, Arx Pax (arxpax.com), which is so tightly interwoven with their personal and professional lives that it can be hard to tell where their relationship ends and the startup begins. They are together almost constantly, day after day, as they ride the roller coaster of startup life through moments of isolation and elation. After years of development, which included a blinding flash of fame, the couple and their company are ready to take the next—and most audacious—step: finding a place to let them build the first large-scale, real-world pilot version of the construction system they have named SAFE: Self-Adjusting Floating Environment.

"Since I was young, I suspected there was a better way to build, especially for natural disasters," says Greg. "It comes down to not challenging Mother Nature, but being wiser in order to work in harmony with her."

Jill and Greg's first encounter took place in the early '80s in a classroom at Saratoga High. Jill recalls being surprised that freshman Greg had somehow been placed in her junior geometry class. Greg remembers being shocked when the teacher stood Jill up one day in class, declared she was too immature to be there, and

kicked her out for the rest of the year. "I remember thinking, 'Awesome, I don't have to do geometry,'" she recalls. Following high school, their paths diverged, crossing only occasionally.

Greg surprised his family when he turned down the University of California at Berkeley and instead enlisted in the Army. A year later, he received a presidential nomination from Ronald Reagan and was accepted to West Point. After graduation, he eventually joined the Airborne Rangers, and he rose to the rank of captain. Upon leaving the Army in 1994, Greg went to work in financial services, which he found deeply unsatisfying. So he decided to honor a lifelong itch to build things and joined a construction crew while he studied architecture. In 2003, he earned a master's degree from Berkeley in architecture. He and his family started a small firm developing residential housing projects in the Bay Area.

Throughout these years, he found himself sometimes overwhelmed with a flood of ideas, filling notebook after notebook with radical plans for reinventing building construction. But when he tried to explain them to his family, he was usually met with the response: If it was a good idea, people would already be doing it. "If everyone thought like that, we'd still be living in caves," Greg says.

Meanwhile, following high school, Jill moved to Maui instead of going straight away to college. A year later, she enrolled at San Diego State University, where she would get a degree in speech communication. After getting a master's from the University of Denver, she eventually landed back in the Bay Area and began working at Apple Computer in marketing. She left the company in 1996, started her own personal fitness business and had two children. The latter inspired her to create Ladybug Productions: a self-help DVD series to teach young children self-sufficiency and self-empowerment.

By the middle of last decade, both newly divorced, Jill found herself crossing paths with Greg from time to time via connections to old friends and family members. She became determined to set Greg up with dates, deciding that he seemed to be making a mess of it himself and always choosing the wrong ones. It was during one encounter with Jill that Greg began unspooling his grand concept for saving the world. The rising tides and growing drumbeat of natural disasters is going to eat away at the safety and security of coastal communities

around the world, he explained. Current structures were, for the most part, not designed to adapt. To solve this and protect these regions, Greg proposed a complex system that would place large buildings on concrete pontoons that float on small bodies of water. He also wanted to develop an electromagnetic system that would levitate buildings ever so slightly off the ground so they would be protected from the shocks of an earthquake.

Greg was inspired by everything from the houseboats he had once studied in Marin County, to large-scale projects like Japan's airport Mega-Float, which was built over water. People had found ways to make battleships buoyant for decades. Why not tall buildings? All this still required Greg to teach himself about things like electromagnetism and would take several years to refine. But Jill knew then they needed to start immediately. In 2012, they founded Arx Pax, the Latin words for "citadel" and "peace." The next year, they were married on a beach on Kauai. The adventure had begun.

Jill helped Greg harness his imagination, and he became more focused, completing work that has now earned him nine patents, with hundreds of others pending. They began looking for partners, and raised \$5 million over three rounds of funding from friends and family. "We didn't do a lot of due diligence or try to figure out how all this was going to work," says Jill. "We just cannonballed in." But as common sense as the idea seemed to them, it still could seem fantastical to an outsider. The company needed a way to demonstrate some of the basic technology on a smaller scale. The opportunity presented itself when chatter began about *Back to the Future* Day: Oct. 21, 2015. Amid the futuristic gizmos in *Back to the Future Part II*, fans bemoaned the fact that no one had invented a hoverboard. Greg realized he could make one. Using the magnetic force architecture Arx Pax had developed to levitate heavy objects, the company built the Hendo hoverboard, which floats just off the floor to let a rider glide. On Oct. 21, 2014—a year in advance of the event—the Hendersons released a video of the Hendo and then launched a Kickstarter campaign that raised more than \$500,000. The hoverboard did the trick.

Greg and Jill were deluged with unimaginable publicity. There were calls from the Smithsonian, *National Geographic*, *Popular Science*. *Time* magazine named the Hendo invention of the year for 2014. That led to deals with NASA, which wanted to incorporate the technology into satellites. The technology is also being integrated into Hyperloop, the long-distance, high-speed transport system that uses vacuum tubes

to send pods hurtling at 700 mph. "There is no one more deserving of all that positive attention than Greg," says Jill. "He has been so ripe with ideas for so long."

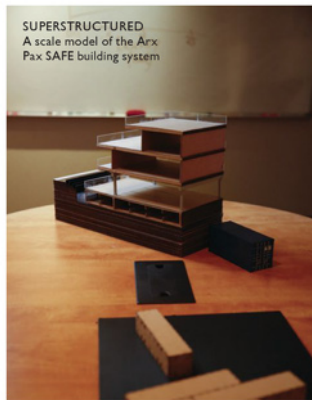
It was a dream. It was a rush. And, ultimately, a distraction. They did not start Arx Pax to make toys. Jill and Greg decided it was time to get back to the real mission: saving the planet.

For now, Arx Pax has decided to focus primarily on SAFE, the system that uses water to float buildings. In addition to being a defense against the rising sea levels caused by global warming and earthquakes, the company is touting it as a system that could have short-term benefits such as allowing communities to build on lands currently considered unbuildable because they are too low or close to water. The past year has been one of relentlessly grinding work, finding and convincing various construction partners to come on board for things such as materials and logistics. And the company has begun the often-humbling process of trying to raise money from investors.

Doug Robertson, president of Saratoga-based structural engineering firm Daedalus, has been following Arx Pax for several years now, and he's convinced the technology and concept are feasible and urgently needed. However, he also points out that the construction industry tends to be a conservative one. "Everyone is talking about this situation of building and climate change," Robertson says. "They're building more green buildings, but these are not very sustainable in the end if they can't withstand rising sea levels and natural disasters. That said, having been involved with the construction industry a long time, it's not an easy one to move."

Arx Pax may be nearing a breakthrough. The company is currently in negotiations with the Republic of Kiribati, a country made up of a number of tiny islands in the Pacific Ocean. It's one of the lowest-lying countries in the world, and two of its islands have already disappeared under water.

The Hendersons are keeping their heads down, leaning on each for support and remaining thankful that they are on this ride together. "I had been thinking about these inventions for years," says Greg. "But I never had the support to see them through. Jill is really the one who enabled me to take flight." They continue to remind themselves that their mission remains a vital one. "Every day, Greg says the same thing," observes Jill. "He says, 'It's going to be a big day today!' And I just laugh because every day is a very big day." ■



"Since I was young, I suspected there was a better way to build, especially for natural disasters. It comes down to not challenging Mother Nature, but being wiser in order to work in harmony with her."

-GREG HENDERSON, ARX PAX