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Visionaries Create Green Hope for the Future

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Award-winning architect Michael McDonough sits with his dog, Asterix, and shares about his myriad ideas for creating a future that is truly green and affordable. (Charlotte Cuthbertson/The Epoch Times)

Of the varying shades of “greenness” in buildings, architect Michael McDonough is pretty much in the realm of kryptonite.

High-performance, net zero energy buildings have not quite hit the mainstream, but a small number of architects and developers are changing that, and McDonough is one of them. (Click [here](#) to see the Net Zero Energy chart.)

“I’m trying to reinvent the future,” he said, looking every part the eccentric, but humble, scientist. “There has to be a hierarchy in green building, and it has to be set by the impact on the planet’s bio systems.”

An artist-turned-architect-turned-amateur-physicist, McDonough said for most of his professional life he has “conducted a series of investigations.”

These investigations have led him to the cutting edge of new technology and industrial design.

The LED (light-emitting diode) lighting he invented wastes no energy and can be directly wired to a solar panel. “LED’s lose 80 to 90 percent of energy as heat. We eliminated that problem,” he said.

The air conditioning unit he invented has no compressor, uses no electricity, and works off solar. “When I first turned it on my electric bill went down. I thought I was onto something.”

His bamboo furniture collection should be available in 6 to 12 months. “Actually growing [bamboo] has enormous benefits,” he said. It is a HEPA filter for air, it filters the water and eco-systems, it grows very rapidly, and it offsets the depletion of rainforest lumbar.

“So if you only look at bamboo as one point in a LEED (Leadership in Energy and Environment Design) system, because you bought a floor, you’re not understanding the large global impact of the material.”

An agricultural project he is working on will provide 10 acres of produce out of one acre. “It waters itself, and heats and cools itself, using all readily-available, off-the-shelf materials.”

But it’s whole buildings he has spent a large amount of time studying recently.



Danny Gans, co-founder and CEO of The Hoboken Brownstone Company stands at the top of the brownfield that is about to become a 220-unit development at the cutting edge of sustainability. (Charlotte Cuthbertson/The Epoch Times)

Building Green: The Top Priorities

McDonough is literally pushing the envelope of energy efficiency with a trio of very functional and largely-ignored technologies that can drive energy use of buildings down by 80 percent.

“We waste 50 to 90 percent of energy in our buildings,” he said. “Energy use per square foot has gone up 14 percent per year in buildings over the past 10 years.”

While everyone is talking about alternative energy, such as solar and wind, McDonough gets excited about autoclaved aerated concrete (AAC). Err... auto-what?

As uncool as it sounds, AAC is the star that sets the stage for energy efficiency. Used as the shell of a building, it is airtight, and with its thermal properties, AAC can save up to 50 percent of energy used for heating and 75 percent in air-conditioning energy use.



"If you're using AAC, your cost will go down on average 10 percent or more," McDonough said. "There is a sound economic underpinning to this."

Throw in a ventilation system that has energy recovery capabilities, and top it off with alternative energy, and you have the perfect recipe for a net zero energy building.

Enter Danny Gans, co-founder and CEO of The Hoboken Brownstone Company.

Sharing the same enthusiasm as McDonough, Gans gazes onto the empty lot he is about to develop with a vision that only he can see.

The plans are on large boards in the back of his car, along with samples of AAC—a product he thinks is so important that starting a factory for it is not out of the question. There are 350 factories making AAC worldwide; it is widely used in Europe, Israel, Australia, and New Zealand. Only two factories exist in the U.S. and Gans says it is partly due to builders being reluctant to embrace new technologies.

"We're living in basically the same type of structures as we were when this country was founded," he said. "I am an urban developer, I believe cities can work."

When speaking to college classes he says he often gets asked, "How can you be a developer if you are an environmentalist?" To which he replies, "How can I be an environmentalist and NOT be a developer?"

Gans and his partner George Vallone started looking for an LEED-qualified architect to help launch them into the cutting edge of green development.

"But LEED AP was not enough, I was looking for more," Gans said. "Michael [McDonough] talked a language that I liked and I could understand."

Gans and Vallone had the perfect challenge—7.5 acres of contaminated land perched just out of central Hoboken. Purchased for about \$20 million in 2006, it was most recently the site of the Van Leer chocolate factory. A pesticide plant at the turn of the century, however, had left arsenic contamination, turning it into a brownfield.



Rendering of the 220-unit north building that will start going up in September, according to The Hoboken Brownstone Company CEO, Danny Gans. (Image courtesy of The Hoboken Brownstone Company)

Once the brownfield is clean, a green building will start to rise, with ground being broken in September.

"The ultimate goal of our buildings is net zero energy," Gans said. The first step is the northern site, which will host 220 housing units and cost \$30 to \$35 million.

AAC will be a main feature.

"With building the right enclosures we can get to 70 to 80 percent less energy," Gans said. An energy recovery system that allows for ventilation, heating, and cooling without throwing good air after bad is next.

Gans said only now does alternative energy make sense. "If I don't do the other steps first, then the amount of alternative energy will not make sense."

In short, a properly designed and constructed mass wall building (using AAC), with balanced ventilation and solar hot water and/or geothermal systems can achieve up to 90 percent energy savings, McDonough said in a 2008 white paper commissioned by Hoboken Brownstone.

“While other green building factors may be considered significant in a larger context, the key to coherent, effective, and readily achievable energy avoidance strategies lies in these three core technologies.”

McDonough’s white paper helped Hoboken Brownstone secure \$3.6 million in funding for the development from the Bureau of Public Utilities. Parts of it have also been adopted into the larger state of New Jersey energy plan.

A good sign for the man who has the future to reinvent.

With the integration of additional alternative and renewable energy sources such a building can produce more energy than it consumes.

- From a white paper Michael McDonough wrote for Hoboken Brownstone, 2008.